

ANTIC DISK: ONLY \$5.95—INCLUDES BONUS — 2 ACTION! GAMES

U.S.A. \$3.95
CANADA \$4.95

Antic

The **ATARI** Resource

FEBRUARY 1988 VOLUME 6, NUMBER 10

SCANdalize!

Do *anything*
to real images

ST SCan Reviewed



8-BIT

- *First-Time Users Handbook*
- *Animation Moviemaker*
- *Killer Speed-Chess*
- *Boink Show in BASIC*
- *7 Easy-To-Type Programs*
- *9 Reviews*

ST

- *6 Flashy Animation Type-ins*
- *14 Reviews*

Transputer—
Atari's New
“Super-Computer”





Software Bonanza!!

Hard-to-find Titles for the Atari 400/800/XL/XE

FOR THE YOUNG ATARI USER - \$9.95 EACH

SESAME STREET

(age 3 - 6 on disk)
Big Bird's Fun House
Ernie's Magic Shapes
Astrogrover
Big Bird's Special Delivery



CBS (age 3 - 6)
Coconotes (cart)
Battlin' Bands (cart)
Math Mileage (disk)
Movie Musical
Madness (cart)



SPINNAKER (all on cartridge)

Adventure Creator (age 8 - up)
Kindercomp (age 3 - 8)
Alphabet Zoo (age 3 - 8)
Story Machine (age 3 - 8)
Face Maker (age 3 - 8)
Kids On Keys (age 3 - 9)
Delta Drawing (age 4 - up)

FISHER PRICE (all on cartridge)

Dance Fantasy (age 4 - 8)
Linking Logic (age 4 - 8)
Logic Levels (age 7 - 12)
Memory Manor (age 4 - 8)



TINK! TONK! (age 4 - 8 on disk)
Count and Add (Tink's Mazes)
Smart Thinker (Land of Buddy Bots)
ABC's (Tink's Adventure)
Subtraction (Subtraction Fair)
Spelling
Thinking Skills (Castle Clobber)

LEAPS and BOUNDS

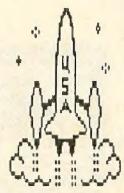
A colorful combination program with a variety of letters, numbers, art & music. (age 4 - 8 on disk)

\$14.95

FUN AND GAMES FOR THE ENTIRE FAMILY

\$5.00 each (on cartridge)

Donkey Kong
Wizard of Wor
Deluxe Invaders
Gorf
Journey to Planets
Missile Command
Pac Man
Basic Rev. A
Music Composer
Assembler Rev A



\$7.99 each (on cartridge)

Space Invaders
Joust
Atari Tennis
Asteroids
Centipede
Defender
Qix
Q-Bert
Return of Jedi



\$7.99 each (on disk)

Wombats Adventure
Home Filing Manager
Touch Typing (disk or cassette)



\$6.99 each (on disk)

ADAMS ADVENTURES
your choice
The Hulk
or
Spiderman

\$9.99 ATARI PAINT (on disk)



\$19.95 PILOT

Programming Language Cartridge, Teachers manual and Pilot Student manual. Learn Turtle Graphics!!



SUPERCHARGE YOUR DISK DRIVE

DRIVE

1050
1050
1050
1050 Happy
810
810
810 Happy

PRODUCT

ICD US Doubler
1050 Happy
Super Archiver/Chip
Scan-It! H1050
810 Happy
Scan-It!/Chip
Scan-It! H810
Super Archiver

FEATURES

188K Double Density
188K DD, Backup, Warpspeed
188K, Backup, Super Utilities
Add Archiver/Editor to Happy
Backup, Warpspeed
Archiver Editor Utilities
Add Archiver/Editor to Happy
Add Super Archiver features to Scan-It!

COST

39.95
99.95
69.95
29.95
99.95
49.95
29.95
29.95 *

* Requires Scan-It! software or Chip installed in drive

SCAN-IT! Archiver/Editor gives you the ability to examine sectors in detail, create custom formats and backup many crashed or copy protected disks.

SUPER ARCHIVER extends and enhances the mapping, formatting and editing capabilities of Scan-It! plus adds fuzzy phantom sector maker with the 1050 Chip version.

SHIPPING INFORMATION: Prices do not include shipping and handling - \$5.00 minimum. Calif. residents include 7% sales tax. Mastercard and Visa accepted if your telephone is listed in your local phone directory. Orders may be pre-paid with money order, cashier check, or personal check. Personal checks are held for three weeks before order is processed. C.O.D orders are shipped via UPS and must be paid with cash. International and APO orders must be pre-paid with cashier check or money order. \$20.00 minimum on all orders. All sales are final - no refunds - All items are fully warranted - prices are subject to change. Phone orders accepted TUESDAY THROUGH FRIDAY from 10:00 am to 6:00 pm PST.

We carry a complete line of ATARI products and have a large public domain library.
Write or call for free catalogue. (408) 749-1003 TUE - FRI 10AM - 6 PM

Lyco Computer Marketing & Consultants

Since 1981

Order processed within 24 hours.

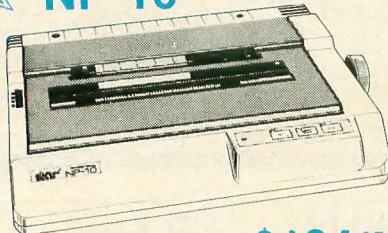
* Special Purchase



- 100 cps draft
- 25 NLQ
- EZ Front Panel Selection
- Auto Single Sheet Feed
- Adjustable Tractor Feed

• One year warranty

NP 10



\$134.95

Great Performance
Great Price

SEIKOSHA SL-80Ai

- Letter quality 54 cps
- Quiet (52 dBA)
- Automatic paper loading
- 16 K buffer

(2-year warranty)

\$295.95



ATARI
520 ST-FM
Monochrome
System

\$659.95

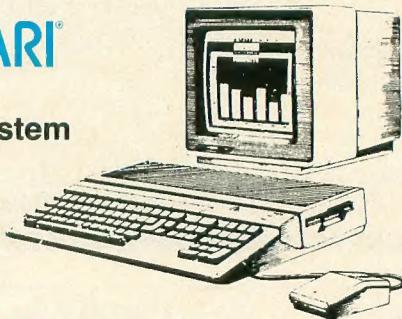
Internal
drive
included



* Full mfg. warranty applies.

ATARI
1040 ST
Color System

\$925.95



**SKC T120 VHS
VIDEO TAPE**

Each.....	\$4.49
3 Pack	\$11.99
10 Pack.....	\$37.50

TO ORDER, CALL TOLL-FREE: 1-800-233-8760
New PA Wats: 1-800-233-8760

Outside Continental US Call: 1-717-494-1030

Hours: 9AM to 8PM, Mon. - Thurs.
9AM to 6PM, Friday — 10AM to 6PM, Saturday

For Customer Service, call 1-717-494-1670,

9AM to 5PM, Mon. - Fri.

Or write: Lyco Computer, Inc.

P.O. Box 5088, Jersey Shore, PA 17740

**See our
2-page ad
elsewhere in
this Magazine**

In-stock items shipped within 24 hrs. of order. NO deposit on C.O.D. orders. Free shipping on prepaid cash orders over \$50 with the Continental U.S. Volume discounts available. PA residents add sales tax. APO, FPO and international orders add \$5.00 plus 3% for priority mail. Advertised prices show 4% discount for cash, add 4% for MasterCard and VISA. Personal checks require 4 weeks clearance before shipping. We cannot guarantee compatibility. We only ship factory fresh merchandise. Ask about UPS Blue and Red Label shipping. All merchandise carried under manufacturers' warranty. Return restriction applicable. Return authorization required. We check for stolen credit cards. We accept purchase orders from educational institutions. All items subject to change without notice.

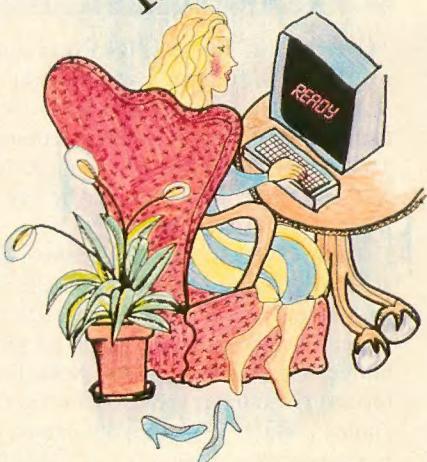
1-800-233-8760

Antic

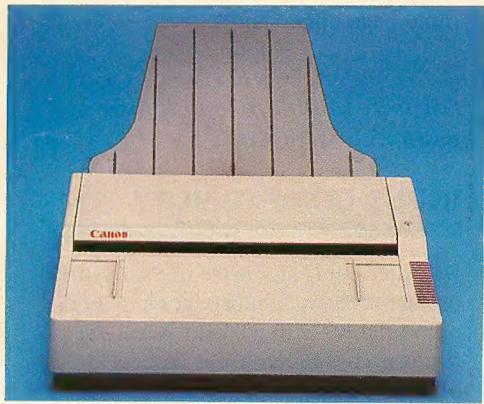
The ATARI® Resource

Only \$5.95—Antic Disk
BONUS: 2 ACTION! Games

1. 2. 3.



FIRST-TIME ATARI USERS HANDBOOK/37



ST PICTURE SCANNING ARRIVES/43

ST RESOURCE

- 43 ST PICTURE SCANNING ARRIVES** by Charles Jackson
Review of Navarone's ST Scan
- 45 GOT-A-MINUTE GRAPHICS** by Allan Moose and Marian Lorenz
Six short ST stunners
- 47 ATARI HEATS WINTER COMDEX** by Anita Malmig
New "ST Super-Computer" draws the crowds
- 51 UTILITY TOOLBOX**
Super-Directory, M-Cache and Fast
- 54 GAMES GALLERY**
Reviews: Vegas Craps, Stationfall, Roadwar 2000, Submarine Battle, Micro League Baseball, 221-B Baker Street
- 58 ST NEW PRODUCTS**
- 59 ST MUSIC**
DXMate, Music Construction Set

FEATURES

25 ARCADE DELIGHTS

REVIEWS: Autoduel, Cycle Knight, Ace of Aces and Bop 'N Wrestle

30 8-BIT ENHANCEMENTS

by Charles Cherry

REVIEWS: Billboard, DISKIO, ICX-85, Smart Speaker, Fontcraft

35 FAST-STACK AND FAST-JUMP

by Bill Bodenstein

40% faster BASIC for you

37 FIRST-TIME ATARI USERS HANDBOOK

by Gregg Pearlman

What to do after you unpack the box!

Type-In-Software

DEPARTMENTS

BONUS GAME

9 KILLER CHESS

Greg Knauss
Two-player ACTION! shootout

SUPER DISK BONUS

13 FROG & REARDOOR

by Greg Knauss
Two fast-moving ACTION! games

GAME OF THE MONTH

17 CURRENT EVENTS

by James Hague
Most players can't take it for more than 45 seconds!

PAGE 6 EXCHANGE

19 SIERPINSKI CURVES

by Allan Sharpe
Fractal "arrowhead" power display

FEATURED APPLICATION

33 MEGANIMATOR

by Jacob Donham
Atari moviemaking has never been easier
TECH TIPS

80 BASIC BOINK SHOW

by Larry Nocella
Bouncing Fujis like you won't believe

Type-In-Software

Type-In-Software

Type-In-Software

Type-In-Software

SOFTWARE LIBRARY

63 TYPE-IN LISTINGS SECTION



ST RESOURCE/43

- | | |
|---------------------------|----------------------------|
| 4 I/O BOARD | 77 SHOPPERS MARKET |
| 16 NEW PRODUCTS | 78 CLASSIFIED |
| 25 PRODUCT REVIEWS | 79 ADVERTISERS LIST |
| 65 THE CATALOG | 80 TECH TIPS |

Antic

The ATARI® Resource

Publisher
James Capparell

Editorial

Nat Friedland, Editor; Charles Jackson, Technical and Online Editor; Gregg Pearlman, Assistant Editor; Heidi Brumbaugh, Program Editor.

Contributing Editors

Ian Chadwick, David Plotkin, David Small.

Art

Claudia Steenberg-Majewski, Art Director; Gregory Silva, Assistant Art Director; Jim Warner, Design/Production Assistant; Katherine Murphy, Ad Production Coordinator; Julianne Ososke, Collateral Printing Coordinator; Terrific Graphics, Typesetting.
Cover Art: Claudia Steenberg-Majewski and Creative Technology.

Circulation

Les Tork, Director; Dixie Nicholas, Subscription Coordinator; Dennis Swan, Distribution Coordinator.

Antic Publishing, Inc.

James Capparell, President and Chairman of the Board; Donald F. Richard and Richard D. Capparell, Directors; Lee Isgur, Advisor to the Board; John Cady, Controller; John Taggart, Advertising Sales; Gary Yost, Marketing; Jack Powell, Product Development; Lisa Wehrer, Catalog Sales; Tom Chandler, Ken Warner, Retail Sales; Scot Tumlin, Technical Support; Pamela Grady, Customer Service; Lorene Kaatz, Credit and Collections Manager; Evelyn Heinzman, Accounts Payable; Brenda Oliver, Accounts Receivable

Advertising Sales

John Taggart, Director

(For Area Sales Representatives, see page 79.)

General Offices
& Catalog Customer Service
(415) 957-0886
Antic, 544 Second Street
San Francisco, CA 94107

Credit Card Subscriptions & Catalog Orders
(800) 234-7001

All 50 states. Monday to Friday,
6 a.m.-6 p.m. Pacific Time.
Visa or MasterCard only!

Subscription Customer Service
(614) 383-3141

Antic, P.O. Box 1919, Marion, OH 43306

February, 1988, Volume 6, Number 10

Antic—The Atari Resource is published monthly by Antic Publishing. Editorial offices are located at 544 Second Street, San Francisco, CA 94107. ISSN 0745-2527. Second Class Postage paid at San Francisco, California and additional mailing offices. POSTMASTER: Send address change to **Antic**, The Atari Resource, P.O. Box 1919, Marion, OH 43306.

Subscriptions: One year (12 issues) \$28. Canada and Mexico add \$8, other foreign add \$12. Disk Edition (12 issues with disks) \$79.95, all foreign add \$25. (California residents add 6½% sales tax for disk subscriptions.)

Editorial submissions should include text and program listings on disk and paper. Submissions will be returned if stamped, self-addressed mailer is supplied. **Antic** assumes no responsibility for unsolicited editorial material.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher.

Antic is an independent periodical not affiliated in any way with Atari Corp. Atari is a trademark of Atari Corp. All references to Atari products are trademarked and should be so noted.

Antic is a registered trademark
of Antic Publishing, Inc.

An Information Technology Company
Copyright ©1988 by Antic Publishing.
All Rights Reserved. Printed in USA.

I/O Board

MEMORY EATER

Antic thanks readers Bill Koonz of Schenectady, NY and Alfred Hicks of Westford, MA who point out an inaccuracy in XL Memory Eater (*Tech Tips, Antic, November 1987*). It's not in fact the 800XL operating system that appends 16 garbage bytes to your BASIC files, but Atari BASIC, Revision B. Using Revision C or such BASICS as BASIC XL/XE from OSS or Turbo BASIC should take care of this problem.—ANTIC ED

NAVARONE HELPFUL

I ordered a clock card from Navarone Industries. However, the battery was discharged when I received it, and the card failed to work after replacing the battery several times.

When I called the company, the person I talked to was so nice and helpful. Within two weeks of returning the clock card to Navarone, I received a new unit. I've had it for more than a year and it keeps perfect time. I could not be more pleased with Navarone. It's pleasant to do business with a company that stands behind its products and is so nice to its customers.

James Mann
Mullan, ID

8-BIT MIDI

In the June, 1985 issue of **Antic** you heralded the coming of MIDI (Musical Instrument Digital Interface) long before anyone else thought this topic would catch on. But with the advent of the Atari ST computers, it seems that our old friend, the 8-bit machine, has been slighted again. Isn't there any 8-bit MIDI software?

Dan Stuart
Roseville, MN

Hybrid Arts, the same company listed in that June, 1985 article, Play it Again, Atari, has expanded its product line—while prices have dropped dramatically. The hardware-software MidiTrack II is now \$174 and MidiTrack III for the 130XE is \$187. Hybrid Arts is at 11920 W. Olympic Blvd., Los Angeles, CA 96064. (213) 826-3777.—ANTIC ED

AW+ ON PANASONIC

The Panasonic 1091 printer works quite well with the Epson printer driver in AtariWriter Plus, except that it prints a zero at the top of the first page of a document. This can be eliminated by typing [CONTROL] [O], 24, [RETURN] at the beginning of the document.

The [CONTROL] [O] is the control character used to place printer codes in the text and 24 is Panasonic's decimal code for Cancel—which clears the text in the print buffer. However, this will not work if the top margin value is greater than 0 in the Global Format. To set the top margin, go to the text file and press [CONTROL] [T], then type in the desired margin setting. (I also found that this procedure doesn't work when I print selected pages of a multi-page document.)

John Swain
San Gabriel, CA

(We were unable to test all these suggestions.—ANTIC ED)

INDUS COMPATIBILITY

Do other Indus disk drive users have this problem? Flight Simulator II rarely boots up properly. Getting World War II Ace to run is even tougher. Does anyone know of a fix? I'd hate to buy a new disk drive.

Victor Decarlo Jr.
Hackensack, NJ

Our copy of Flight Simulator II runs fine on our Indus drives. Try checking your drive speed and cleaning your read/write head.—ANTIC ED

ATARI CAME THROUGH

My early model 520ST developed problems with the power supply and video output. I contacted Atari Corp., and a manager of customer relations phoned me back and promptly arranged for exchange of the defective computer.

I can tell you that I've been most pleased with the ST computer and will not hesitate to purchase more Atari systems in the future. Atari Corp. is serious about customer satisfaction.

Russell Miller Jr.
New Castle, DE

I/O Board

XMM801 WOES

The manual for my Atari XMM801 printer says I need an 9-bit screen-dump program that can dump to an Epson printer. Where do I get such a program? Also, I've found that I only get garbage characters when I try to print with Broderbund's Print Shop.

William Tilley
Vestal, NY

*Several screen-dump programs will do the job, including Kwik Dump (*Antic*, March 1985) and Lister Plus (\$19.95, *The Catalog*, APO179). Regarding Print Shop, our review of the XMM801 (*Antic*, December 1986) said that the printer wouldn't work with Print Shop and no solution was on the horizon at that time.*

But now, XLEnt Software has been working on an XMM801 translator disk for Print Shop. According to XLEnt's Linda Kubota-Barnes, Atari says the translator makes Print Shop '98% com-

patible' with the XMM801. 'We can't guarantee 100% compatibility, but the only problems I've seen are with calendars,' she says. You can get the translator by sending \$10 to: XLEnt Software, P.O. Box 5228, Springfield, VA 22150.—ANTIC ED

CONQUERING "LORDS"

Here are some solutions for the problems mentioned in your review of Electronic Arts' Lords of Conquest (*Antic*, May 1987). First, if a map file can't be found, that's because it has the same number as another one on the disk. Second, the musical tribute at the end can be cut short by pressing the joystick trigger. Finally, don't reboot after each game. Just choose to play again and you'll return to the main menu.

Jason Strautman
CompuServe ID
72337,2611

LABEL SPACING

I thoroughly enjoyed *Designer Labels* (*Antic*, April 1987), but the program wasn't exactly compatible with the brand of labels I used. My labels print out at a distance of 1 1/32 inches apart—instead of 1 inch exactly. How do I change the listing to accommodate different label formats? The only feature I need to change is the distance needed between labels.

Andrew Weiner, DDS
Encino, CA

Unfortunately, most printers cannot easily print a "one-time" 1/32-inch line feed between each label—which is all you need to do. Star printers, for example, can only advance the paper in increments of 1/144 of an inch, such as 1/144, 2/144, 3/144 and so on. The code to advance the paper 5/144, for example, would be:

LPRINT CHR\$(27); 'J'; CHR\$(5)

continued on page 8

MICRO TYME

A DIVISION OF MICRO PERIPHERALS, INC.

P.O. BOX 369 • KETTERING, OHIO 45409



ATARI

ST's Color or Mono	CALL
Supra 20, 30, 60 Meg	CALL
SH 204 20 Megabyte	CALL
130 XE	CALL
1050 Disk Drive	CALL
1020 Color Printer/Plotter	29
Power Supply 1050	17
Power Supply XE/XL	29
Power Supply for Indus GT	19
XEP-80...80 Column!	CALL

PRINTERS

PANASONIC:	
KX-P1080i, 120 cps	189
KX-P1091i, 160 cps	219
KX-P1092i, 240 cps	339
KX-P110 Ribbon, Blk	9

STAR:	
NX-10 (80 col)	189
NP-10...NEW MODEL	149

CITIZEN:	
MSP-10...	CALL

EPSON:	
LX-86	CALL
FX-286E	CALL

MODEMS

SX-212-300/1200	CALL
XM-301 Direct Connect	CALL
AVATEX 1200 bps	95
AVATEX 1200 H.C.	129

AVATEX 2400...NEW	CALL
-------------------	------

INTERFACES

P:R CONNECTION	69
SUPRA MICROSTUFFER (64K)	59
SUPRA/MPP 1150	CALL

MONITORS

NAP Green W/Audio	85
NAP Amber W/Audio	90
NAP Composite Color	CALL

Basic Graph	85
Basic XE	90
Basic XL	115
Basic XL Tool Kit	129
Bop 'n' Wrestle	149
Champ LodeRunner	169
Chessmaster 2000	189
F-15 Strike Eagle	209
Fight Night	229
Flight Simulator II	249
Flight Simulator III	269
Flight Simulator IV	289
Flight Simulator V	309
Flight Simulator VI	329
Flight Simulator VII	349
Flight Simulator VIII	369
Flight Simulator IX	389
Flight Simulator X	409
Flight Simulator XI	429
Flight Simulator XII	449
Flight Simulator XIII	469
Flight Simulator XIV	489
Flight Simulator XV	509
Flight Simulator XVI	529
Flight Simulator XVII	549
Flight Simulator XVIII	569
Flight Simulator XIX	589
Flight Simulator XX	609
Flight Simulator XXI	629
Flight Simulator XXII	649
Flight Simulator XXIII	669
Flight Simulator XXIV	689
Flight Simulator XXV	709
Flight Simulator XXVI	729
Flight Simulator XXVII	749
Flight Simulator XXVIII	769
Flight Simulator XXIX	789
Flight Simulator XXX	809
Flight Simulator XXXI	829
Flight Simulator XXXII	849
Flight Simulator XXXIII	869
Flight Simulator XXXIV	889
Flight Simulator XXXV	909
Flight Simulator XXXVI	929
Flight Simulator XXXVII	949
Flight Simulator XXXVIII	969
Flight Simulator XXXIX	989
Flight Simulator XXXX	1009
Flight Simulator XXXXI	1029
Flight Simulator XXXXII	1049
Flight Simulator XXXXIII	1069
Flight Simulator XXXXIV	1089
Flight Simulator XXXXV	1109
Flight Simulator XXXXVI	1129
Flight Simulator XXXXVII	1149
Flight Simulator XXXXVIII	1169
Flight Simulator XXXXIX	1189
Flight Simulator XXXX	1209
Flight Simulator XXXXI	1229
Flight Simulator XXXXII	1249
Flight Simulator XXXXIII	1269
Flight Simulator XXXXIV	1289
Flight Simulator XXXXV	1309
Flight Simulator XXXXVI	1329
Flight Simulator XXXXVII	1349
Flight Simulator XXXXVIII	1369
Flight Simulator XXXXIX	1389
Flight Simulator XXXX	1409
Flight Simulator XXXXI	1429
Flight Simulator XXXXII	1449
Flight Simulator XXXXIII	1469
Flight Simulator XXXXIV	1489
Flight Simulator XXXXV	1509
Flight Simulator XXXXVI	1529
Flight Simulator XXXXVII	1549
Flight Simulator XXXXVIII	1569
Flight Simulator XXXXIX	1589
Flight Simulator XXXX	1609
Flight Simulator XXXXI	1629
Flight Simulator XXXXII	1649
Flight Simulator XXXXIII	1669
Flight Simulator XXXXIV	1689
Flight Simulator XXXXV	1709
Flight Simulator XXXXVI	1729
Flight Simulator XXXXVII	1749
Flight Simulator XXXXVIII	1769
Flight Simulator XXXXIX	1789
Flight Simulator XXXX	1809
Flight Simulator XXXXI	1829
Flight Simulator XXXXII	1849
Flight Simulator XXXXIII	1869
Flight Simulator XXXXIV	1889
Flight Simulator XXXXV	1909
Flight Simulator XXXXVI	1929
Flight Simulator XXXXVII	1949
Flight Simulator XXXXVIII	1969
Flight Simulator XXXXIX	1989
Flight Simulator XXXX	2009
Flight Simulator XXXXI	2029
Flight Simulator XXXXII	2049
Flight Simulator XXXXIII	2069
Flight Simulator XXXXIV	2089
Flight Simulator XXXXV	2109
Flight Simulator XXXXVI	2129
Flight Simulator XXXXVII	2149
Flight Simulator XXXXVIII	2169
Flight Simulator XXXXIX	2189
Flight Simulator XXXX	2209
Flight Simulator XXXXI	2229
Flight Simulator XXXXII	2249
Flight Simulator XXXXIII	2269
Flight Simulator XXXXIV	2289
Flight Simulator XXXXV	2309
Flight Simulator XXXXVI	2329
Flight Simulator XXXXVII	2349
Flight Simulator XXXXVIII	2369
Flight Simulator XXXXIX	2389
Flight Simulator XXXX	2409
Flight Simulator XXXXI	2429
Flight Simulator XXXXII	2449
Flight Simulator XXXXIII	2469
Flight Simulator XXXXIV	2489
Flight Simulator XXXXV	2509
Flight Simulator XXXXVI	2529
Flight Simulator XXXXVII	2549
Flight Simulator XXXXVIII	2569
Flight Simulator XXXXIX	2589
Flight Simulator XXXX	2609
Flight Simulator XXXXI	2629
Flight Simulator XXXXII	2649
Flight Simulator XXXXIII	2669
Flight Simulator XXXXIV	2689
Flight Simulator XXXXV	2709
Flight Simulator XXXXVI	2729
Flight Simulator XXXXVII	2749
Flight Simulator XXXXVIII	2769
Flight Simulator XXXXIX	2789
Flight Simulator XXXX	2809
Flight Simulator XXXXI	2829
Flight Simulator XXXXII	2849
Flight Simulator XXXXIII	2869
Flight Simulator XXXXIV	2889
Flight Simulator XXXXV	2909
Flight Simulator XXXXVI	2929
Flight Simulator XXXXVII	2949
Flight Simulator XXXXVIII	2969
Flight Simulator XXXXIX	2989
Flight Simulator XXXX	3009
Flight Simulator XXXXI	3029
Flight Simulator XXXXII	3049
Flight Simulator XXXXIII	3069
Flight Simulator XXXXIV	3089
Flight Simulator XXXXV	3109
Flight Simulator XXXXVI	3129
Flight Simulator XXXXVII	3149
Flight Simulator XXXXVIII	3169
Flight Simulator XXXXIX	3189
Flight Simulator XXXX	3209
Flight Simulator XXXXI	3229
Flight Simulator XXXXII	3249
Flight Simulator XXXXIII	3269
Flight Simulator XXXXIV	3289
Flight Simulator XXXXV	3309
Flight Simulator XXXXVI	3329
Flight Simulator XXXXVII	3349
Flight Simulator XXXXVIII	3369
Flight Simulator XXXXIX	3389
Flight Simulator XXXX	3409
Flight Simulator XXXXI	3429
Flight Simulator XXXXII	3449
Flight Simulator XXXXIII	3469
Flight Simulator XXXXIV	3489
Flight Simulator XXXXV	3509
Flight Simulator XXXXVI	3529
Flight Simulator XXXXVII	3549
Flight Simulator XXXXVIII	3569
Flight Simulator XXXXIX	3589
Flight Simulator XXXX	3609
Flight Simulator XXXXI	3629
Flight Simulator XXXXII	3649
Flight Simulator XXXXIII	3669
Flight Simulator XXXXIV	3689
Flight Simulator XXXXV	3709
Flight Simulator XXXXVI	3729
Flight Simulator XXXXVII	3749
Flight Simulator XXXXVIII	3769
Flight Simulator XXXXIX	3789
Flight Simulator XXXX	3809
Flight Simulator XXXXI	3829
Flight Simulator XXXXII	3849
Flight Simulator XXXXIII	3869
Flight Simulator XXXXIV	3889
Flight Simulator XXXXV	3909
Flight Simulator XXXXVI	3929
Flight Simulator XXXXVII	3949
Flight Simulator XXXXVIII	3969
Flight Simulator XXXXIX	3989
Flight Simulator XXXX	4009
Flight Simulator XXXXI	4029
Flight Simulator XXXXII	4049
Flight Simulator XXXXIII	4069
Flight Simulator XXXXIV	4089
Flight Simulator XXXXV	4109
Flight Simulator XXXXVI	4129
Flight Simulator XXXXVII	4149
Flight Simulator XXXXVIII	4169
Flight Simulator XXXXIX	4189
Flight Simulator XXXX	4209
Flight Simulator XXXXI	4229
Flight Simulator XXXXII	4249
Flight Simulator XXXXIII	4269
Flight Simulator XXXXIV	4289
Flight Simulator XXXXV	4309
Flight Simulator XXXXVI	4329
Flight Simulator XXXXVII	4349
Flight Simulator XXXXVIII	4369
Flight Simulator XXXXIX	4389
Flight Simulator XXXX	4409
Flight Simulator XXXXI	4429
Flight Simulator XXXXII	4449
Flight Simulator XXXXIII	4469
Flight Simulator XXXXIV	4489
Flight Simulator XXXXV	4509
Flight Simulator XXXXVI	4529
Flight Simulator XXXXVII	4549
Flight Simulator XXXXVIII	4569
Flight Simulator XXXXIX	4589
Flight Simulator XXXX	4609
Flight Simulator XXXXI	4629
Flight Simulator XXXXII	4649
Flight Simulator XXXXIII	4669
Flight Simulator XXXXIV	4689
Flight Simulator XXXXV	4709
Flight Simulator XXXXVI	4729
Flight Simulator XXXXVII	4749
Flight Simulator XXXXVIII	4769
Flight Simulator XXXXIX	4789
Flight Simulator XXXX	4809
Flight Simulator XXXXI	4829
Flight Simulator XXXXII	4849
Flight Simulator XXXXIII	4869
Flight Simulator XXXXIV	4889
Flight Simulator XXXXV	4909
Flight Simulator XXXXVI	4929
Flight Simulator XXXXVII	4949
Flight Simulator XXXXVIII	4969
Flight Simulator XXXXIX	4989
Flight Simulator XXXX	5009
Flight Simulator XXXXI	5029
Flight Simulator XXXXII	5049
Flight Simulator XXXXIII	5069
Flight Simulator XXXXIV	5089
Flight Simulator XXXXV	5109
Flight Simulator XXXXVI	5129
Flight Simulator XXXXVII	5149
Flight Simulator XXXXVIII	5169
Flight Simulator XXXXIX	5189
Flight Simulator XXXX	5209
Flight Simulator XXXXI	5229
Flight Simulator XXXXII	5249
Flight Simulator XXXXIII	5269
Flight Simulator XXXXIV	5289
Flight Simulator XXXXV	5309
Flight Simulator XXXXVI	5329
Flight Simulator XXXXVII	5349
Flight Simulator XXXXVIII	5369
Flight Simulator XXXXIX	5389
Flight Simulator XXXX	5409
Flight Simulator XXXXI	5429
Flight Simulator XXXXII	5449
Flight Simulator XXXXIII	5469
Flight Simulator XXXXIV	5489
Flight Simulator XXXXV	5509
Flight Simulator XXXXVI	5529
Flight Simulator XXXXVII	5549
Flight Simulator XXXXVIII	5569
Flight Simulator XXXXIX	5589
Flight Simulator XXXX	5609
Flight Simulator XXXXI	5629
Flight Simulator XXXXII	5649
Flight Simulator XXXXIII	5669
Flight Simulator XXXXIV	5689
Flight Simulator XXXXV	5709
Flight Simulator XXXXVI	5729
Flight Simulator XXXXVII	5749
Flight Simulator XXXXVIII	5769
Flight Simulator XXXXIX	5789
Flight Simulator XXXX	5809
Flight Simulator XXXXI	5829
Flight Simulator XXXXII	5849
Flight Simulator XXXXIII	5869
Flight Simulator XXXXIV	5889
Flight Simulator XXXXV	5909
Flight Simulator XXXXVI	5929
Flight Simulator XXXXVII	5949
Flight Simulator XXXXVIII	5969
Flight Simulator XXXXIX	5989
Flight Simulator XXXX	6009
Flight Simulator XXXXI	6029
Flight Simulator XXXXII	6049
Flight Simulator XXXXIII	6069
Flight Simulator XXXXIV	6089
Flight Simulator XXXXV	6109
Flight Simulator XXXXVI	6129
Flight Simulator XXXXVII	6149
Flight Simulator XXXXVIII	6169
Flight Simulator XXXXIX	6189
Flight Simulator XXXX	6209
Flight Simulator XXXXI	6229
Flight Simulator XXXXII	6249
Flight Simulator XXXXIII	6269
Flight Simulator XXXXIV	6289
Flight Simulator XXXXV	6309
Flight Simulator XXXXVI	6329
Flight Simulator XXXXVII	6349
Flight Simulator XXXXVIII	6369
Flight Simulator XXXXIX	6389
Flight Simulator XXXX	6409
Flight Simulator XXXXI	6429
Flight Simulator XXXXII	6449

MARK WILLIAMS C. AN ENLIGHTENING DEVELOPMENT FOR ATARI ST USERS.

If you've tried your hand at developing applications on the Atari ST, you know the problem. Programming tools aren't only hard to come by, they're hard to use. One might even say primitive. But now for some enlightening news: you can have all the power, portability and versatility of the C language from a leader in professional C programming tools, Mark Williams.

BRING YOUR PROGRAMMING UP TO SPEED.

The Mark Williams C compiler produces fast, dense code and supports the complete Kernighan & Ritchie industry standard C. You'll have access to GEM's AES and VDI libraries for programs using graphics, icons and the Atari mouse. And Mark Williams C lets you take advantage of the full 16 megabytes in Atari's 68000 microprocessor.

STREAMLINE DEVELOPMENT WITH POWER UTILITIES.

Mark Williams C is loaded with everything you'll need for professional development. Bring the power of the UNIX environment to your Atari ST with our

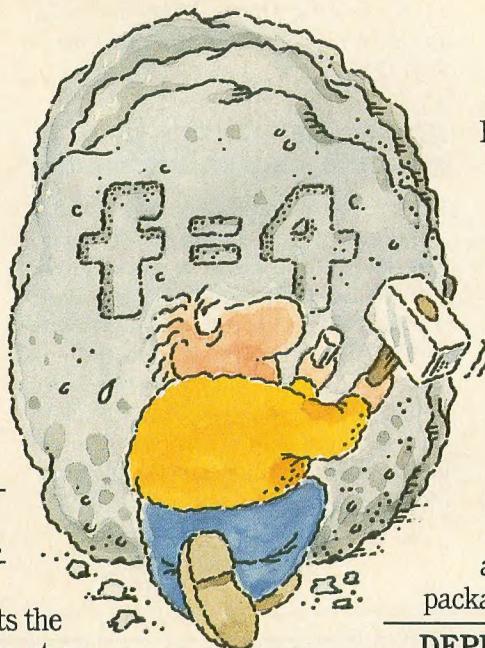
NEW VERSION 2.0 FEATURES

- ★ 50% faster compile time
- ★ Improved code: 20% faster dhrystone
- ★ Full access to AES/VDI libraries now with 200 new pages of documentation and dozens of examples
- ★ New integrated edit-compile cycle: editor automatically points to errors
- ★ Source and object code for RAM disk cuts compile time in half
- Complete Kernighan & Ritchie C plus extensions
- Microshell Command Processor, a powerful UNIX style shell
- MicroEMACS Full Screen Editor with commented source code
- Make Program Building Discipline
- Complete symbolic debugger
- Assembler, linker and archiver
- Powerful Utilities Package: one-step compiling/linking with cc command, egrep, sort, diff and more
- Over 600 pages of documentation including 120 sample C programs
- Not copy protected

Sieve benchmark*: Compile and link time in seconds.
Mark Williams C 46.0
Megamax 78.5

MARK WILLIAMS C FOR THE ATARI ST: \$179.95
60 DAY MONEY BACK GUARANTEE

*Sieve benchmark from Byte, 1983, done on one double-sided floppy disk and included RAM disk.



Microshell Command Processor including pipes, I/O redirection and more. Edit your program with the highly acclaimed MicroEMACS full screen editor. Accelerate and simplify compiling with *make* which finds and recompiles only those modules affected by your changes. Then, when you're ready for debugging, call on our db Symbolic Debugger with single step, breakpoint and stack traceback functions. Over 40 commands, including a linker and assembler, provide a total development package for your Atari ST.

DEPEND ON A NAME WITH A HISTORY OF PERFORMANCE.

Mark Williams C for the Atari ST is part of our growing line of C compilers. A line that includes the C compiler chosen by DEC, Intel, Wang and thousands of professional programmers. Now our Atari C compiler is earning its own reputation:

"Finally a great C compiler that exploits the power of the ST"—Sigmund Hartmann, President, Atari Software Group

"The all-around best choice for serious software development on the ST."—Douglas Weir of *ANALOG COMPUTING*

GET WHAT YOUR ATARI ST HAS BEEN WAITING FOR.

Mark Williams C is just what your Atari ST was made for: powerful, professional programming. So now that you can have Mark Williams C for just \$179.95, what are you waiting for?

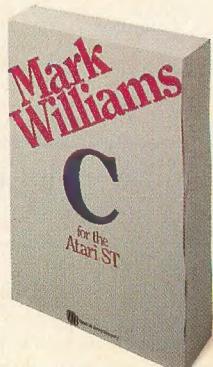
Ask your Atari dealer about Mark Williams C or order today by calling 1-800-MWC-1700.*

*In Illinois call: 312-472-6659

 **Mark Williams Company**

1430 West Wrightwood, Chicago, Illinois 60614

© 1986, Mark Williams Company
UNIX is a trademark of Bell Labs.





Nickel City Electronics

P.O. Box 1025 • Buffalo, NY 14225 • 1-800-634-1870
In New York State and Tech Support Call 1-716-684-7350



NX1000

NLQ - 36 CPS
DRAFT - 144 CPS

\$169

NX10 Rainbow Color Printer — Call For Price

Atari ST Software

Leader Board	26.09
Leader Board - Tournament	13.03
A-Calc	39.15
Flash!	26.09
Hard Disk Toolkit	19.56
Hard Disk Accelerato	26.09
Chessmaster 2000	30.44
Autoduel	33.71
Gridiron Football	33.71
Zork Trilogy	45.68
GFA Draft	63.95
GFA Basic	50.95
GFA Vector	37.95
GFA Compiler	50.95
ST Replay	113.95
Karate Kid II	25.95
Intro to ST Logo	18.95
Midisk Plus 2	25.95
DOS Shell	25.95
Trivia Challenge	25.95
Michtron BBS	50.95
Michtron Utilities	37.95
Realitzer	145.95
Major Motion	25.95
Mission Mouse	18.95
Airball	25.95
Michtron Alt	18.95
Digi Drum	25.95
Michtron Stuff	25.95
Time Bandits	25.95
Easy Record	50.95
Make It Move	37.95
Goldrunner	25.95
Trimbase	63.95
Pinball Factory	25.95
Cards	25.95
Cornerman	31.95
Business Tools	31.95
Mi-Term	18.95
Animator	25.95
M-Cache	25.95
Score Writer	25.95
Mudpies	12.95
Michtron Back-up	25.95
Lands of Havoc	12.95
Michtron Echo	25.95
Kissed	18.95
Flip Side	18.95
8-Ball	18.95
X-10 Powerhouse	48.95
Michtron DFT	31.95
Mighty Mail	31.95
Perfect Match	25.95
Mi-Print	18.95
Michtron Calendar	18.95
Super Conductor	50.95
Match Point	25.95
Shuttle II	25.95
Super Directory	25.95
Techmate	25.95
Michtron 220ST	31.95
St Wars	26.09
Nava. Sound Digitizer	113.95
Nava. Video Digitizer	113.95
Nava. Time Keeper	32.95
Photopro St	25.95
Partner Fonts	19.56
Barbarian	26.09
Max Pax	29.95
Flight Simulator II	35.34
True Basic	51.95
T. B. Sorting & Search	32.95
T. B. Math Toolkit	32.95

NB24-10
NLQ - 72 CPS DRAFT - 216 CPS
24 PIN HEAD
Character Font Cartridges
IBM-Epson Compatible

\$399



Power Without the Price™

520 Mono System	549.95
520 Color System	699.95
1040 Mono System	749.95
1040 Color System	899.95

We carry software for all computers.
Call for Pricing

DISKS

(BOX OF 10)

MEMOREX DISKS

3 1/2	S/D	11.25
3 1/2	D/D	15.95
5 1/4	S/D	5.95
5 1/4	D/D	6.95
5 1/4	D/HD	15.95

GENERIC DISKS

(BOX OF 10)

Labels & Sleeves Included

3 1/2	D/D	11.95
5 1/4	D/D	4.99

GOLD STAR

TTL Amber or Green

\$75 MBM-2195

Horizontal Resolution
900 Lines at Center

Cables & Acco.

A/B Parallel Switch Box	22.95
A/B Serial Switch Box	22.95
A/B/C/D Parallel Switch Box	39.95
A/B/C/D Serial Switch Box	39.95
6 Outlet AC Surge Pr	9.95
B-109 Parallel Card	29.95
B-106 Serial Card	26.95
Male/Male Gender Chg	5.95
Feml/Feml Gender Chg	5.95
IBM Parallel Cable 6'	5.49
IBM Parallel Cable 10'	7.49
M-M RS232 Cable 6'	7.95
M-M RS232 Cable 10'	8.49
M-F RS232 Cable 6'	7.95
M-F RS232 Cable 10'	8.49
IBM Modem Cable 6'	5.99
IBM Modem Cable 10'	7.99
IBM at Modem Cable	5.99
M-M Centronics 6'	11.95
M-F Centronics	11.95
M-M Centronics 10'	12.95
IBM Keyboard Extension	4.99
Monitor Extension-DB9 M-F	11.95
Monitor Cable-DB9 M-M	11.95
IBM Color RGB Cable-DB9 Cable to 8 Pin Din	7.99
Mac' to Imagewriter	9.99
Mac' to Imagewriter II	9.99
Mac' to Hayse	9.99
A/B DB9 Switch Box	32.95
ABCD DB9 Switch Box	49.95
A/B Telephone Switch Box RJ11	34.95
Serial Cross-Over Switch Box	39.95
Parallel Cross-Over Switch Box	39.95
M-M DB9 Gender Changer	5.95
F-F DB9 Gender Changer	5.95

We carry the
full line of
SUPRA
Products.
Call for Pricing.

- Full manufacturer warranty.
 - Personal check 3 weeks clearance.
 - Return authorization required.
 - Prices show 3% cash discount.
 - Compatibility not guaranteed.
 - COD accepted.
 - Freight paid on all prepaid orders over \$200.
- APO, FPO, International: add \$5 plus
3/4 priority.
No sales tax outside N.Y.
Prices/availability subject to change.

continued from page 5

To find the proper printer code for 1/32 of an inch, we calculate how many times 1/144 of an inch goes into 1/32 of an inch and place the result in our program line.

But this time the answer, 4.5, is not an integer and can't be used in the program's CHR\$ function. The program patch below will alternately use a 4 and a 5 in the printer code, creating an average line spacing of 1/32-inch.

The variable "T" represents the number of labels printed so far. When "T" is odd, the printer receives the CHR\$(4) character. Otherwise, the printer receives the CHR\$(5) character.

```
2265?#C2;CHR$(27);'J';CHR$(4 +  
(I/2 = INT(I/2))):REM  
CODE FOR STAR/GEMINI
```

Here's the modification for Epson printers:

```
2265?#C2;CHR$(27);'J';CHR$(7 -  
(I/4 = INT(I/4))):REM  
CODE FOR EPSON  
—ANTIC ED
```

RACAL-VADIC MODEM

A member of our Atari users group donated a Racal-Vadic model 1200V modem for our BBS. Unfortunately, we can't find a VA2055 power supply, or the specs or voltage for the pin-in. Can anyone help?

Ray St. Cyr
Nederland, TX

PRINTER DRIVER

I have a Star NX-10 printer, a P:R: Connection from ICD and an Atari 130XE. I've found that you don't need a printer driver to use AtariWriter Plus with this system. When asked what printer you're using, press [H] for "other," and at the next menu press [E] for Epson FX-80. All extra printer functions will work fine. Use [CONTROL] [G] functions 4 and 5 for superscripts and subscripts—just as you would on an Atari XMM801 printer.

Randy Hefner
Vice President,
Hickory ACE
Hickory, NC

ATARI FOR SCHOOLS

I wish Atari would initiate some type of educational program where schools received free or reduced-cost STs with practical software. Then educators could see how little Apple offers in comparison. When children talk about computers, they talk about Apples. I'd like to see that perception change. Parents want to purchase inexpensive computers, but they see them as game machines. School districts using better software—and computers—could be a very inexpensive means of changing these misconceptions about Atari.

Darrell Strait
Blue Springs, MO

FLYING IN CIRCLES

A BASIC aviation program I've written for the Atari 800XL requires plotting several high-resolution circles in Graphics 8 mode. I use the following routine—which takes an abysmally long time:

```
CN| 5 REM FILENAME = CIRCLE.BAS  
PP| 10 GRAPHICS 8  
XL| 20 COLOR 1:DEG  
KK| 30 X=77:Y=29:LET R=4:GOSUB 50  
KL| 40 X=93:Y=27:LET R=6:GOSUB 50  
ZC| 45 END  
ZD| 50 PLOT X+R,Y  
DU| 60 FOR ANG=0 TO 360 STEP 30  
YU| 70 PLOT X+R*COS(ANG),Y+R*SIN(ANG)  
OD| 80 NEXT ANG  
ZZ| 90 RETURN
```

Is there a faster machine language equivalent of steps 30-90 that I can call with the USR command?

Phil Howland
Hillsborough, CA

Darek Mibocka's Graphics Utility Package in the article G.U.P. the Great (Antic, June 1985) should do what you want.—ANTIC ED

XE KEYBOARD HELP

I ran across a company called Best Electronics which supplies 130XE keyboard mylar film for \$22. It's better than the original film, and it sure beats sticking your XE in the closet because some of the contacts on the keyboard film have broken. Best Electronics is at 2021 The Alameda, Suite 290, San Jose, CA 95126. (408) 243-6950.

J.A. Bader
Akron, OH

TAX CHANGES

In view of the many changes in the 1987 tax code, would you consider an early publication of your excellent annual Syncalc spreadsheet Income Tax template? The November issue would not be too soon for coverage of this vital subject.

W.R. Waddell, Jr.
Harrisonburg, VA

You have a good point, and we'll try to get the 1988 tax template into print as quickly as possible. However, when we received your letter in July, we were already finishing up this November, 1987 issue. And the advance IRS information we need for the tax template will not be released until much closer to the end of 1987. So it's just not realistic to expect the tax template before the March or April, 1988 issue. At least these issues are available the month before the cover date. For example, you can buy the April issue at the beginning of March. And look for the template on ANTIC ONLINE as early as February.—ANTIC ED

SEIKOSHA PROBLEM

The Seikosha SP-1000A printer is supposed to be Epson-compatible, but I can't get it to work with 1ST Word on my 1040ST. Can anyone help?

Stephen Shulman
Jamestown, NY

Unfortunately, we have the same problem. Readers?—ANTIC ED

FICKERS

Help! The light on my 1040ST disk drive flickers very dimly all the time. Is this normal? Where can I have it repaired?

Phillip Qualls
El Paso, TX

That flickering light is completely normal and does not need to be repaired, according to Atari Engineering. You must have excellent eyesight, Phillip. We had never noticed that our own 1040ST drive lights flicker too, and we had to take the STs into a dark room before we could see it.—ANTIC ED

J.D. RULES!

Kudos to J.D. Casten! Maximillian B. (Antic Super Disk Bonus, September 1987) has sent me as close to the loony-bin as I've ever been—great character graphics plus the all-around near-impossibility of winning.

Here are some loopholes I found in Casten's game that I feel he overlooked. If you press [BREAK] while in room 1, then type CONT, you'll find yourself in room 2—still with eight lives. You can reach room 3 the same way, but it doesn't work after that.

For other Max B. freaks, I will divulge the solutions to rooms 1 and 2. In room 1, take the rightmost brick of the four above the frazzies—that's what I call those things on the board—and place it above and to the right of the opening of the bottom section. Then seal that opening by grabbing the bottom brick on the far right, placing it next to the first brick. Release the frazzies, then escape through the small opening to the compartment you just sealed off, and wait. Shortly, all but one frazzie will enter the trap in the upper left corner of the screen. To trap that one, seal off the box the frazzies were in, and escape back to the compartment. When the left wall of the frazzie room opens, go through it into room 2.

In room 2, you'll need only one brick. To trap the frazzies, just consecutively cover one of the small openings at the bottom, returning to the pile of bricks and waiting while the redirected frazzies interact. Then cover the opening to the left and repeat the process.

Fred Beondo

(We were unable to test all these suggestions.—ANTIC ED)

Antic welcomes your feedback, but we regret that the large volume of mail makes it impossible for the Editors to reply to everyone. Although we do respond to as much reader correspondence as time permits, our highest priority must be to publish I/O answers to questions that are meaningful to a substantial number of readers.

*Send letters to: Antic I/O Board,
544 Second Street, San Francisco,
CA 94107.*

by GREG KNAUSS

Killer Chess

Two-player ACTION! shootout

Killer Chess brings a new frenzy of aggression to the classic game, as you mop up the chessboard without waiting for your opponent to make moves. This type-in program is written in ACTION! and requires the ACTION! language cartridge from Optimized Systems Software, as well as an 8-bit Atari computer with at least 32K memory and a disk drive. However, this month's \$5.95 Antic Disk includes a special "runtime" version of Killer Chess that you can use without the ACTION! cartridge—plus two fast-moving bonus runtime games by the author.

Unless you're a real fanatic or a tournament contender, I'll bet that you don't play much chess anymore. Let's face it, most "regular folks" find chess boring!

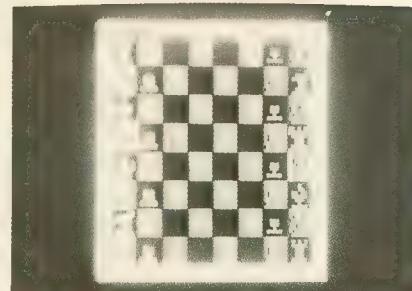
But now imagine a revitalized, fast-ACTION! chess—where the players don't take turns.

That's right... no turns. Killer Chess players make legal chess moves as fast as they can, deciding on instant strategies that they would have spent dull minutes pondering in a traditional game. Stodgy old chess becomes a fast-gun shootout.

Welcome to Killer Chess, written in ACTION! the fast, powerful programming language from Optimized Systems Software. You and your human opponent will use an Atari 8-bit computer and a pair of joysticks to battle it out in a radical new version of a traditional game.

GETTING STARTED

TYPING IT IN: Insert the ACTION! cartridge into your 8-bit Atari and type in Listing 1, KILLER.ACT. Type carefully, because there isn't a TYPO II for ACTION! After you have a copy



of the complete program safely saved, go to the monitor by pressing [CONTROL] [SHIFT] [M] and compile the program by typing [C] [RETURN]. When the cursor starts blinking again, type [R] [RETURN] and the title page should appear.

MONTHLY DISK USERS: You can play Killer Chess without owning the ACTION! cartridge. Just insert your Antic Monthly Disk into your disk drive, remove all cartridges from your Atari (XL/XE owners should press the [OPTION] key) and turn on your Atari. When the DOS menu appears, just type [L][RETURN], then type KILLER.EXE [RETURN].

When the title screen is seen, press [START] to begin a game. When the

continued on page 12

WHEN YOU'VE SOLD YOU MUST BE DOING

No Brag, Just Fact!

Over 1,800,000 programs sold to date—and each program includes:

- **Free Customer Technical Support (for all registered users)**
- **A Money Back Guarantee (if you can find a better program, we'll buy it for you)****
- **A very liberal Upgrade & Exchange Policy (which means you never have to worry about obsolete software)****



\$69.95

PARTNER ST

Twelve instantly accessible, memory-resident desktop accessories.

Accessories At Your Command:

- **Instant Thesaurus:** Immediate access to over 60,000 synonyms—while you use your word processor, spreadsheet, or any other program.

- **Appointment Calendar and Datebook:** Keeps track of important dates and deadlines. View entire month on screen—marked with your messages—or produce handy calendar printouts.
- **Memo Pad and Mini-Word Processor**
- **Phone List and Auto Dialer***
- **Expense Account Manager**
- **Vital Statistics:** Instant access to statistical data such as metric equivalents, mileage between cities, toll-free numbers, and area codes.
- **Time Keeper:** Record how your time is spent for a particular day, week, month or year.
- **Full-Function and Financial Calculators**
- **Typewriter:** Use your computer like a traditional typewriter. Perfect for typing envelopes.
- **SwiftDOS:** Easy access to important DOS commands.

PARTNER ST also includes:

- **"Escape!"**: A stress-relieving arcade game.
- **A Quick-Start Mini Manual:** Designed to get you up and running in less than 40 minutes.

**WORD WRITER ST,
DATA MANAGER ST AND
SWIFTCALC ST INTERFACE
TOGETHER FOR A COMPLETE
PRODUCTIVITY SYSTEM**

The Timeworks Desktop PUBLISHER

Where you once needed a typesetter, designer, and paste-up artist, you can do it all yourself with THE TIMEWORKS DESKTOP PUBLISHER. Includes everything you need to produce professional-quality printed documents on your ST computer!



\$129.95

Features:

- **Automatic Page Style Formatting:** Set up a page style only once. The computer follows it automatically, inserting rules, headers, and footers.
- **A Full-Featured Word Processor**
- **A Wide Variety of Font Styles**—in multiple sizes.
- **A Built-In Text Editor** that allows you to write headlines, taglines, and captions to fit any space.
- **High Resolution Graphics:** Imports illustrations and graphics from leading graphic programs.
- **Automatic Kerning:** Opens or tightens word and letter spacing.
- **A Wide Selection of Built-In Patterns, Textures, and Shades**



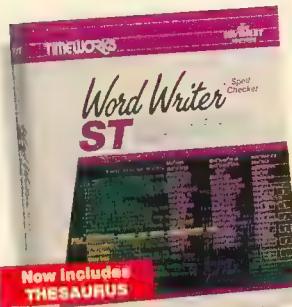
• **Use THE TIMEWORKS DESKTOP PUBLISHER to produce:** Newsletters, Brochures, Flyers, Forms, Reports, Bulletins, Menus, Certificates, Letterheads—the possibilities are endless!

*A phone modem is required for this feature.

**Details on every Timeworks package.

†Reg. Trademark of Atari Corp. © 1982 Timeworks, Inc. All Rights Reserved.

1,800,007 PROGRAMS, *SOMETHING* RIGHT.



\$79.95

Word Writer ST

WORD WRITER ST has more features, more power, and is easier-to-use than any other ST word processor!

Features:

- **A Continuous, 90,000-Word Spell Checker** that automatically identifies misspelled words as you type your document.
- **An Integrated Thesaurus** with over 60,000 synonyms and alternatives.
- **On-Screen Underlining, italics and Boldface,** Lightface, Subscript and Superscript are displayed on your screen—as you write.
- **An Outline Processor** that quickly organizes notes, facts, and ideas in convenient outline format.
- **Form Letter Printout (Mail Merge):** Prints multiple copies of the same document while automatically inserting personalized information into the body of each document.
- **A Personal Dictionary:** Allows you to add thousands of your own words (e.g. proper names or technical terms) to WORD WRITER ST's built-in dictionary.

SwiftCalc ST

A powerful, easy-to-use spreadsheet designed for home and business use.

Features:

- **Super Graphics:** Graphically displays and prints out business information using pie charts, bar charts, line plots, point plots, hi-lo-close stock price plots, and more.
- **Sideways:** Lets you print all columns on one continuous sheet...sideways.
- **8192 Rows and 256 Columns Provide Up To 2,097,152 Cells** (locations) in which to place information.
- **Windows:** Allow you to work on two sections of your spreadsheet simultaneously.
- **Help Screens:** Allows you to use the program—without referring to your manual.
- **Formatting:** Choice of formats—decimal (up to 15 places); graphics; exponential notation; \$ sign and commas. Plus, eight user-defined formats.

\$79.95

The Critic's Choice

"WORD WRITER ST could well become the word processor of choice among ST users...Highly recommended."

Compute
"A real breakthrough of affordable power and convenience in the ST market"

Antic
"First rate."

Start
"WORD WRITER ST is an excellent word processing program."

ST World
"If only more software publishers would meet the high standards for users' manuals set by Timeworks."

Atari Explorer



\$79.95

Data Manager ST

A complete general information Storage and Retrieval System with report writing, business graphics, and label making capabilities.

Features:

- **Flexibility** that allows you to modify your data base structure by changing the size or position of fields of information—at any time.
- **A Complete Report Writer** that generates customized data reports. You specify the title, location, and sequence of each column.
- **An Extensive Business Graphics Package** with pie charts, bar charts, line plots, point plots, hi-lo-close stock price plots, and more.
- **Label Maker:** Prints your name and address file onto standard mailing labels, and transfers and prints text information onto labels and tags.

These popular Atari 520/1040 ST+ programs are available at your favorite dealer, or contact Timeworks today.

To Order Call: **1-312-948-9202**

For Update Information Call: **1-312-948-9206**



MORE POWER FOR YOUR DOLLAR

Timeworks, Inc. 444 Lake Cook Road
Deerfield, Illinois 60015 312-948-9200

COMPUTER ELITE

CALL (614) 836-9600
P.O. BOX 213
GROVEPORT, OH 43125

8-BIT HARDWARE

800XL	99.99
65XE	99.99
130XE	139.99
XFS51 DBL DRIVE	172.99
COLOR 13" MONITOR	199.99
GREEN 12" MONITOR	87.99
PRINTERS & INTERFACES	
PANASONIC 1081i...	154.99
PANASONIC "NEW..."	
1091i	193.99
STAR NP10	139.99
STAR NX10	159.99
PR CONNECTION	59.99
SUPRA MPP 1150	42.99
MPP MICROPRINT	32.99
ATARI XETEC	39.99
ICD INTERFACE	42.99

520 COLOR SYS	649.99
ATARI 520 MONO SYSTEM	494.99
DISK DRIVES	
SF 354 SINGLE	139.99
SF 314 DOUBLE	204.99
INDUS DOUBLE	199.99
HARD DRIVES	
ATARI SH204	532.99
SUPRA 20 MEG	549.99
SUPRA 30 MEG	769.99
ASTRA HD +	849.99

WRITE OR CALL FOR FREE CATALOG

HOW TO ORDER: CASHIER CHECK, MONEY ORDER, MASTERCARD* OR VISA* (ADD 4% FOR CHARGE CARDS). NO PERSONAL CHECKS... C.O.D.'S... SHIPPED U.S. ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE... SHIPPING: ADD \$3.00 ON ALL ORDERS UNDER \$100.00 ADD \$5.00 ON ALL ORDERS OVER \$100.00 ACTUAL FREIGHT CHARGED ON MULTIPLE ORDERS. INTERNATIONAL: ACTUAL FREIGHT CHARGED ON ALL ORDERS OUTSIDE THE CONTINENTAL UNITED STATES INCLUDING A.P.O.

Customer satisfaction IS our business

MODEMS

CAPETRONIC HC	109.99
AVITEX HC	99.99
AVITEX 1200	76.99
AVITEX 2400 BAUD	229.99
ATARI SX212	66.99
ATARI XM301	42.99
SUPRA 1000E	39.99

8-BIT ACCESSORIES

8 BIT MOUSE	47.99
XEP 80 COLUMN CARD	69.99
MULTI/I/O BRD 256K	179.99
MULTI/I/O BRD 1 MEG	299.99
130XE ADAPT/I/O	19.99
COMPUTER EYES	89.99

STOP! AND LOOK AT THESE PRICES
ST TRACK BALL 49.99
WITH MOUSE PORT

ST SOFTWARE

PUBLISHING PARTNER	94.99
SUPER BASE	109.99
ST TALK PROFESS	24.99
PRINTSHOP ST	43.99
CAD 3D 2.0	56.99
BB-ST	34.99
BARDS TALE	36.99
ST EXPRESS	67.99
GFA BASIC	52.99
WORD WRITER ST	49.99
DATA MANAGER ST	49.99
PARTNER ST	44.99
DOLLARS & SENSE	64.99
FLEET STREET	77.99
DEGA'S ELITE	49.99
VIP PROFESSIONAL	149.99

8-BIT SOFTWARE

SYN FILE PLUS	29.99
PRINTSHOP	27.99
ATARI WRITER PLUS	33.99
ATARI WRITER 80	34.99
BASIC XE	46.99
BASIC XL	35.99
PAPERCLIP W/SPELL	37.99
WARSHIP	36.99
WARGAME CONST.	19.99
TOP GUNNER	14.99
F-15 STRIKE	21.99
LEADERBOARD	24.99
10TH FRAME	24.99
BOP N WRESTLE	19.99
INFILTRATOR	19.99
TRAIL BLAZER	19.99
LURKING HORROR	24.99
WIZARDS CROWN	24.99
SPARTA DOS X	49.99
ETERNAL DAGGER	25.99
SHILOH	25.99
ACE OF ACES	19.99
PAWN	24.99

ST ACCESSORIES

EZ RAM 520	164.99
Z-TIME 520	44.99
Z-TIME 1040	51.99
MEGAMAX C	152.99
PRO COPY	26.99
BARDS TALE	36.99
F-15 STRIKE	26.99
PAPER BOY	32.99
TRAIL BLAZER	34.99
DEFENDER/CROWN	32.99
MICRO. WREST	29.99
GAUNTLET	34.99
RINGS OF ZILFIN	25.99

HRS 10-10
MON-SAT.

CIRCLE 009 ON READER SERVICE CARD

game begins, both players will be able to simultaneously move their respective cursors around the board. With joystick 0, player 1 controls the white cursor and white pieces. With joystick 1, player 2 controls the gray cursor and gray pieces.

PLAYING KILLER CHESS

Simply place the cursor over any piece you want to move and press the joystick button. Now move the cursor over a square that would be a legal move for that piece and press the button again. If the move is illegal, the computer will tell you so—with a rather unpleasant sound—and let you try again. Otherwise the piece will be placed at the new square. If you accidentally pick up a piece and don't want to move it, just replace the cursor over the piece you selected and press the button again. The piece will be dropped.

To capture an enemy, simply make a legal move on top of it. The offending piece will be removed from play. You can capture a piece your oppo-

nent is "holding." The piece isn't actually moved until it is set down again.

To win, just land one of your characters on top of the opponent's King. To return to the title screen, press [START] or wait about 10 seconds.

Killer Chess does not have castling or *en passant* moves, which are allowed under advanced chess rules but would be too confusing here.

ABOUT THE PROGRAM

The biggest programming problem in Killer Chess was detecting illegal chess moves. My solution is quite simple and can be applied to any chess program. The method is even fast enough to be used with BASIC.

Here's what I did: When a piece is selected, its old position is recorded. Each new position chosen by a player is also recorded. The old position is then subtracted from the new position and stored in a "delta" value, one delta for X and one for Y. Delta means how much something changes. So if



If you think this issue's Killer Chess is your kind of imaginative, fast-response Atari game challenge, you'll also enjoy our February Super Disk Bonus—which consists of two additional clever games by the same author, Greg Knauss.

Frog and Reardoor, the bonus games, feature outstanding graphic imagery. They have strong, simple storylines and require fast thinking as well as fast eye-hand coordination. Frog has a nature scenario that kids are sure to like. Reardoor is a nerve-wracking space shoot-up where you must zap monsters at uncomfortably close quarters.

All of Knauss's games are written in ACTION!, the powerful 8-bit programming language by Optimized Systems Software. However, the machine language "runtime" versions of Frog and Reardoor—also Killer Chess—on this month's Antic Disk can be played on any 8-bit Atari computer without the OSS ACTION! cartridge. (Runtime listings

the new X position is 5 more than the previous one, the Delta X would be five. If the new Y position is 1 less than the old, Delta Y would be -1.

I then used IF statements to determine if the piece was allowed to move to that spot. For instance, a pawn is



Super Disk Bonus

By "Killer Chess" author, GREG KNAUSS

Two Fast-Moving ACTION! Games

are impossible to print in the magazine, due to their extreme length.)

For ACTION! programmers, the original source code of all three games is also on the monthly disk.

FROG & REARDOOR

Frog gives you or your kids the chance to vicariously live the everyday life of this commonplace amphibian. You will see a frog sitting complacently on a lily pad while fat, black flies make their way back and forth above the pond. Use your joystick to jump the frog in any direction and press the trigger button to zap the frog's tongue way out for a fly feed.

Reardoor's setting is not unlike the Transporter Room on the Enterprise. Except instead of Kirk and Spock beaming up, you have marooned space colonists and vicious lizard-like aliens desperately trying to board your rescue spacecraft.

You'll see three closed airlock doors and the control panel. The three airlocks

will open, revealing two colonists and one alien. The doors close again in an instant and whatever was standing in them will have entered the ship. You must prevent each alien from boarding, by firing the gun mounted in the airlock where the monster is lurking. You do this by pressing the key bearing the number of the doorway you want to clear out.

At higher difficulty levels, the aliens begin to realize that their friends are being blown to bits, so they don the spacesuits of dead humans—but the faceplates, belts and boots turn green. Eventually the ranks of aliens thin out and they occasionally let three humans enter the airlocks simultaneously.

However, if nine aliens succeed in boarding your spaceship, they'll (rather stupidly) enter the main reactor and destroy everything for the surrounding four or five miles.

RUNNING YOUR BONUS

Frog (FROG.EXE), Reardoor (REARDOOR.EXE) and an instruction file covering both games are on this month's Antic Disk. These runtime programs *cannot* be played directly from the monthly disk menu. For complete loading instructions, choose selection 5 on the Main Menu of Side B and read the game HELP manual.

Your February 1988 Antic Disk—featuring all three ACTION! games in runtime as well as every program in this issue—will be shipped to you within 24 hours after receiving your order. Just phone Toll-Free to the Antic Disk Desk at (800) 234-7001. The monthly disk is only \$5.95 (plus \$2 for shipping and handling) on your Visa or MasterCard. Or mail a check for \$5.95 (plus \$2 shipping and handling) to Antic Disk Desk, 544 Second Street, San Francisco, CA 94107. ■

Only \$5.95 for Antic Monthly Disk!

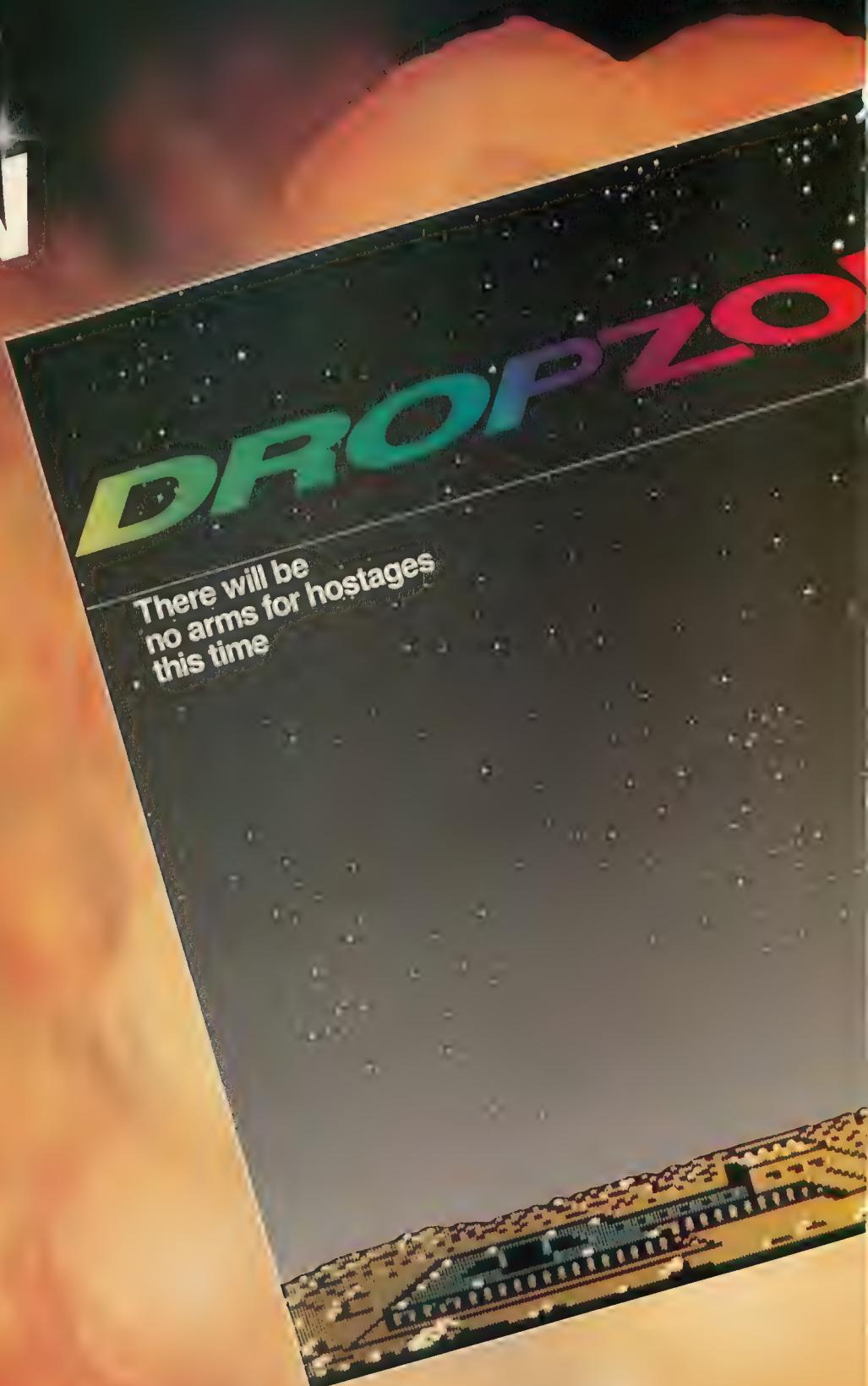
only allowed to move forward, so I checked to make sure that Delta X is equal to nothing but 1. If the old position was equal to its starting position, I allowed it to move an extra space—because Pawns can move two spaces on their first move.

If the Pawn's new position is on top of an opponent's piece, I allowed for a Delta Y movement of either 1 or -1. Combined with the Delta X, that would result in diagonal movement. Simple, really. It just took a bit of planning to work out the values for the

special conditions of each chess piece. ■

Greg "Maddog" Knauss of Rancho Palos Verdes, California is an indefatigable ACTION! language programmer. Listing on page 73

New
New
New



\$24⁹⁵
each
requires Disk Drive and Joystick

Available at your favorite Atari dealer.
To order direct, send a check or
money order for \$24.95 + \$2.00
shipping and handling for each
program ordered.



SOLAR STAR

microdaft

Shoot the disrupters
take the crystals,
and run.

microdaft

19 Harbor Drive
Lake Hopatcong, NJ 07849
(201) 663-0202

New Products

New Products notices are compiled by the Antic staff from information provided by the products' manufacturers. Antic welcomes such submissions, but assumes no responsibility for the accuracy of these notices or the performance of the products listed.

ASTRO-GROVER, ERNIE'S MAGIC SHAPES, BIG BIRD'S SPECIAL DELIVERY

(educational software)

Hi-Tech Expressions

1700 N.W. 65th Avenue, Suite 9

Plantation, FL 33313

(800) 848-9273

(305) 584-6386 in Florida

\$9.95 each, 64K disk

CIRCLE 190 ON READER SERVICE CARD

Kids learn on the Atari with three new games featuring Sesame Street characters. **Astro-Grover** helps children work with numbers in five different ways—assisted by Grover and the Zips from the planet Zap. Or perhaps the children would prefer to help Ernie match shapes in six different ways while improving visual discrimination skills in **Ernie's Magic Shapes**. In **Big Bird's Special Delivery**, an object recognition and classification game, children help Big Bird and Little Bird deliver packages to the right stores.

CLASH: ETHEREAL

(entertainment software)

Imagists Group

P.O. Box 1428

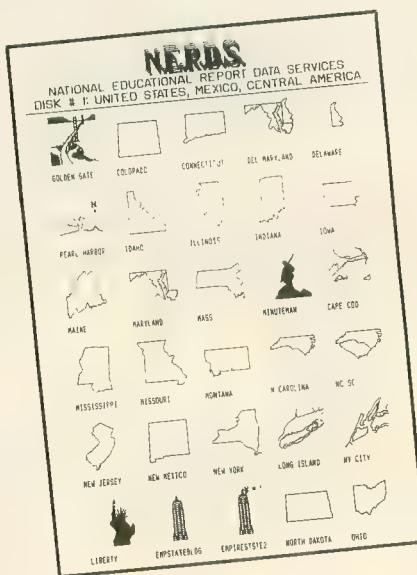
Fairfax, VA 22030

(703) 764-0835

\$12.95, 48K disk

CIRCLE 195 ON READER SERVICE CARD

That pesky Satan hoodwinked you into condemning your soul to an eternity of pain and suffering, by giving you a magic stone that continually pulled you deeper into its grip. By the time you caught a clue, it was too late; so you tossed the stone into a volcano and committed yourself to helping those less fortunate than you. This incurs the wrath of the Prince of Darkness, but a technicality gives you another chance to save yourself. Now the graphic adventure game begins.



N.E.R.D.S. DISKS

(printing software)

N.E.R.D.S Software

18 Wendy Drive

Farmingville, NY 11738

Requires Print Shop

\$8.95 each, \$15 for both; 48K disk

CIRCLE 191 ON READER SERVICE CARD

These two disks contain map icons for use with Broderbund Software's Print Shop. Write reports, using these graphics with colored pens for full-page illustrations. Each disk contains about 115 blank maps. Disk 1 consists of the United States, Mexico and Central America. Disk 2 has maps of Europe, South America, Canada and the Mediterranean. Site Licensing for Users Groups and schools is available.

MODS, FIXES & UPGRADES

(technical booklet)

RUNES

P.O. Box 1982

Ames, IA 50010

(515) 232-1252

\$2 (plus \$1 for shipping)

CIRCLE 196 ON READER SERVICE CARD

Mods, Fixes & Upgrades is a compilation of hardware project articles collected by MAGIC (Midwest Atari Group—Iowa Chapter). Included are step-by-step memory upgrade and wiring instructions, as well as diagrams and repair instructions for your keyboard or modem.

WARP SPEED, VER. 7.10

(disk drive enhancement)

Happy Computers, Inc.

P.O. Box 1268

Morgan Hill, CA 95037

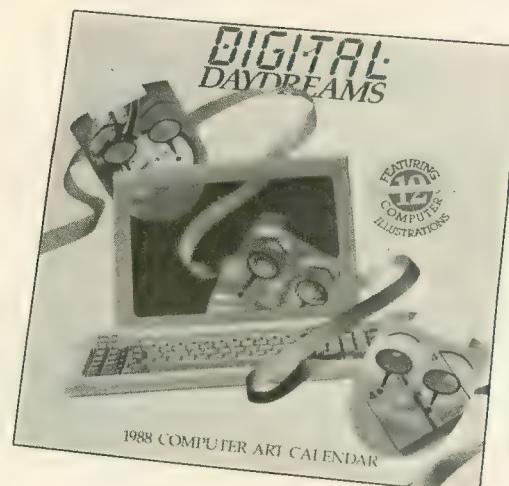
(408) 779-3830

\$89.95—Hardware/software

\$10—Software only

CIRCLE 192 ON READER SERVICE CARD

Atari 8-bit computers and IBM PC compatibles can now share text files, databases and higher-level language programs on floppy disk with the IBMXFR program, which is now part of Happy Computers' **Warp Speed Software**, Version 7.10 for the Atari 1050 drive. The IBM need not be there for the conversion.



DIGITAL DAYDREAMS

(wall calendar)

Publishing Ink.

521 State Street

Glendale, CA 91203

(818) 500-7857

\$10.95

CIRCLE 193 ON READER SERVICE CARD

The **Digital DayDreams** computer art wall calendar is 100% computer-generated, using current graphic and desktop publishing technology. It features artwork from several types of computer, including the Atari ST, and includes selections from a Symbolics computer animation system used for generating sophisticated television graphics.

continued on page 76

Game of the Month Type-In Software

By JAMES HAGUE

Current Events

Most players can't take it for more than 45 seconds!

Current Events is a two-player game that's likely to drive you crazy if you attempt to play a round lasting longer than 45 seconds. Do you have the guts to go a nonstop two minutes? This BASIC program works on all 8-bit Atari computers having at least 32K memory, disk or cassette.

It's another Sunday night and a familiar episode is about to take place in the basement of the multi-billion-dollar corporation Ice Cubes International (famous for its line of monogrammed cubes). The two masterminds behind this highly successful conglomerate, Mikey and Chuckie, are once again having their weekly argument—Who gets to use the company computer system?

Soon enough, Mikey and Chuckie once again decide to solve their weekly disagreement in a logical manner. The two billionaires begin yanking circuits out of their computer. The one who ends up with the majority of parts gets to use the machine, if he is able to put it back together.

START CIRCUITING

Current Events is a two-player game that lets you and a friend simulate Sunday nights in the basement of Ice Cubes International. Type in Listing 1, CURRENT.BAS, check it with TYPO II and SAVE a copy.

If you have trouble typing in the special characters in lines 9025-9030, 9080-9100, 9120 and 9180-9186, don't type them in. Listing 2 will create them for you. Type Listing 2, check it with TYPO II and SAVE a copy. When you RUN Listing 2, it creates these hard-to-type lines and stores them in a file called LINES.LST.

To merge the two programs, disk users LOAD "D:CURRENT.BAS" and then ENTER "D:LINES.LST." Cassette continued on next page



THE AMAZING NEW VOICE MASTER® Junior

... TURNS **\$39.95**
YOUR COMPUTER
INTO A TALKING
AND LISTENING
SERVANT ...



High-Tech hits again! Voice Master Jr. gives both speech output and voice recognition with this single hardware product! Your voice controls programs, or appliances, robots, and more with spoken commands. Verbal response back gives status, verifies, or requests your reply! Speech output and recognition patterns are recorded into memory with your voice. Programming is simple with new commands added to BASIC. Demo programs get you up and running quickly. A music bonus lets you write and compose musical scores merely by whistling the tune. Unlimited uses for fun, education, practical applications. Speech and recognition qualities the finest available. Truly a remarkable product you will love.

The Covox Voice Master Jr. comes complete with all hardware, software (5 1/4" floppy), and instructions for only \$39.95. 30-day satisfaction guarantee. One year warranty. (Add \$4 shipping and handling for USA, \$6 Canada, \$10 overseas.) Available for Commodore 64/128, Atari 800/80XL, 130XE. Specify when ordering. Visa, MasterCard phone orders accepted. Other enhanced Voice Master systems available for Commodore 64/128, Apple II+ /Ile/Iic, IBM PC and compatibles.

Call or write today for FREE Product Catalog
COVOX INC. (503) 342-1271
675 Conger St., Eugene, Oregon 97402

CIRCLE 005 ON READER SERVICE CARD



“SUPER ARCHIVER”!® (for ATARI 1050 drives)



The new SUPER ARCHIVER, obsoletes all copying devices currently available for the ATARI 1050! It eliminates the need for Patches, PDB files, Computer Hardware, etc. Copies are exact duplicates of originals and will run on any drive; without exaggeration, the SUPER ARCHIVER is the most powerful PROGRAMMING/COPYING device available for the 1050! Installation consists of a plug-in chip and 6 simple solder connections. Softwares included. Features are:

- TRUE DOUBLE DENSITY
- ULTRA-SPEED read/write
- FULLY AUTOMATIC COPYING
- SUPPORTS EXTRA MEMORY
- SCREEN DUMP to printer
- TOGGLE HEX/DEC DISPLAY
- SECTOR or TRACK TRACING
- AUTOMATIC DIAGNOSTICS
- DISPLAYS HIDDEN PROTECTION
- ADJUSTABLE/CUSTOM SKewing
- AUTOMATIC SPEED COMPENSATION
- AUTOMATIC/PROGRAMMABLE PHANTOM SECTOR MAKER
- ARCHIVER/HAPPY ARCHIVER COMPATIBLE
- BUILT-IN EDITOR-reads, writes, displays upto 35 sectors/track (short)
- BUILT-IN CUSTOM FORMATTER - upto 40 sectors/track
- BUILT-IN DISASSEMBLER
- BUILT-IN MAPPER - upto 42 sectors/track
- DISPLAYS/COPIES Double Density HEADERS
- AUTOMATIC FORMAT LENGTH CORRECTION
- SIMPLE INSTALLATION

The SUPER ARCHIVER is so POWERFUL that the only programs we know of that can't be copied are the newer ELECTRONIC ARTS and SYNCFILE/SYNCAUC (34 FULL sectors/track). If you want it ALL...buy the "BIT-WRITER"! also...then you'll be able to copy even these programs!

**THE SUPER ARCHIVER
\$79.95 “BIT-WRITER”! \$79.95**

The Super Archiver "BIT-WRITER"! is capable of duplicating even the "uncopyable" EA and SYN series which employ 34 FULL sectors/track. "BIT-WRITER"! is capable of reproducing these and FUTURE protection schemes of all non physically damaged disks. PLUG-IN circuit board and 4 simple solder connections. The SUPER ARCHIVER with "BIT-WRITER"! is the ultimate PROGRAMMING/COPYING device for Atari 1050's EXACT DUPLICATES of originals are made! Copies run on ANY drive.

DEALER/DISTRIBUTOR/USER GROUP Discounts available. Call for info!

Master Card - Visa phone orders
Money Orders - Check mail order
(N.Y. State residents add 7% tax)

COMPUTER SOFTWARE SERVICES
P.O. BOX 17660
ROCHESTER, N.Y. 14617
(716) 467-9326

CIRCLE 015 ON READER SERVICE CARD

users: CLOAD Listing 1, then insert the separate cassette used for Listing 2 and ENTER "C:".

Remember to SAVE the completed program before you RUN it. Now you're ready to play. Plug a pair of joysticks into ports 1 and 2 and RUN the program.

When the title screen appears, press [SELECT] to choose the length of the game—from a fast-moving 15 seconds to a grueling two minutes. About 30 to 45 seconds seems to be as much as most players can stand. Press [START] to begin.

The main playfield is a white, grid-like circuit. Player 1 is a Blue Thing that starts in the lower left corner. Player 2 is a Yellow Thing that starts in the upper right corner. The object is to change more of the circuit to your color than your opponent does, before the timer reaches zero.

To move, push the joystick in the direction you want to go. Once you're in motion, you can't stop until you hit the edge of the circuit. And you cannot reverse your direction. Instead, you must go "around the block." As you move, you fill the circuit with a pulsating trail in your color. Anything you move over will change to your color, even if it's currently in your opponent's color.

The first complication is the transporters—red arrows on the left and right edges of the circuit. If you drive into an arrow, you'll be transported to the opposite side of the circuit and the transporter will disappear. There are only four of these, so use them wisely.

Second, when the two "Things" collide, each will be sent back to its starting corner—and started off again in a random direction!

QUESTION BOXES

Finally, those red blocks branded with question marks are event boxes. They're positioned at random locations on the circuit. There are five at the start of the game, each of which affects the electricity in the circuit differently when hit—or, in other words, causes "Current Events."

Each box makes something different happen. But since the boxes all look alike, there's no way to tell which Current Event will be triggered until you ram a box. However, each event happens only once per game.

NULL BOX: Nothing happens. Surprised?

BLUE SPLATTERER: Explodes when hit, covering the surrounding area with blue. Great for player 1, but not for player 2. Note that the blue splatters more horizontally than vertically.

YELLOW SPLATTERER: Same thing, but splatters yellow instead.

POSITION SWITCHER: Instantly swaps not only the positions of both players, but their current directions as well. Needless to say, this could drop you into a far from ideal position.

continued on page 24



DISCOUNT SOFTWARE

DUST COVERS

1040 ST COMPUTER	\$ 8.00
S20 ST COMPUTER	8.00
130 XE COMPUTER	8.00
800 XL COMPUTER	8.00
SF 314 DISK DRIVE	7.00
SF 354 DISK DRIVE	7.00
1050 DISK DRIVE	8.00
1025 PRINTER	8.00
1027 PRINTER	8.00
SC1224 MONITOR	10.00
OKIMATE 10/20	7.00
STAR SG-10	9.00
PANASONIC 1080i/1091i ..	9.00

JOYSTICKS

Epyx 500XJ	\$15.00
WICO - The Boss	12.50
WICO - Three-Way	22.50
The Terminator	15.95

RIBBONS

Atari XMM801	\$7.50
Atari SMM804	7.50
Atari 1025 (Black)	3.00
Atari 1025 (Color)	3.50
Star SG10/SG15 (Black) ..ea.	3.00
Star SG10/SG15 (Color) ..ea.	3.50
Star NX10/NL10/NP10...ea.	7.50
Star Powertype	6.50
Panasonic 1080/1091/1092 ..ea.	8.50
Okimate 10/20 (Black) ..ea.	6.00
Okimate 10/20	
Multicolor	6.00
Atari 1027 Ink Rollers	5.00

MISCELLANEOUS

American Mouse House	\$5.95
American Mouse Mats: Red/Grey/ Blue & Brown	7.50
Disk Notcher	4.00

WE CARRY A COMPLETE LINE OF SOFTWARE, ACCESSORIES & PERIPHERALS FOR THE ATARI XL/XE & ST — PLEASE CALL FOR CURRENT PRICES

Order Line
1-800-282-0333



10 a.m.-8 p.m. Mon.-Thurs.
10 a.m.-6 p.m. Friday
10 a.m. to 3 p.m. Saturday

37 S. Broad Street, Fairborn, OH 45324

Customer Service
& Ohio Residents
1-513-879-9699



1020 PAPER	\$4.95
(2 ROLLS TO A PACKAGE)	
1020 PENS, BLACK	\$2.50
(4 PENS TO A PACKAGE)	
1020 PENS, COLOR	3.00
(3 PENS TO A PACKAGE)	
PRINT 'N DRAW (D)	9.95

ATARI 1020 COLOR PRINTER



\$26.95

SOFTWARE ONLY — Prepaid orders over \$50 receive free shipping via UPS in continental U.S. Please add #2 orders under \$50. HARDWARE and all orders requiring shipment via U.S. Post Office are subject to additional freight charges. C.O.D. orders under \$100.00 accepted - add #6. Charge card orders add #2 service charge. Ohio residents add 6% sales tax. Personal checks require a three-week waiting period. No waiting when paid by credit card, certified check or money order. All items subject to availability and price change. PLEASE CITE AD NUMBER WHEN ORDERING. ALL RETURNS MUST BE ACCOMPANIED BY AN AUTHORIZATION NUMBER. FOR YOUR PROTECTION WE CHECK FOR CREDIT CARD FRAUD.

AD #AT-028

by ALLAN SHARPE

Sierpinski Curves

Fractal "arrowhead" power display

This short, interesting demonstration listing clearly shows the power of fractal mathematics to create complex, everchanging shapes. The BASIC program works on all 8-bit Atari computers of any memory size, with disk or cassette.

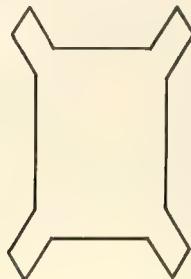
Sierpinski Curves is the second program published in *Antic* under our exchange agreement with Page 6, England's leading Atari magazine. (See *Graphics Impossible*, October 1987). Allan Sharpe of the Brighton Users Group sent this short, flashy demonstration of fractal mathematics to Page 6, where it appeared in the May/June 1987 issue.

"Fractals imitate nature," explained Charles Jackson in *Fractals for Your Atari* (*Antic*, April 1986). Fractal curves are "infinitely squiggly." They are used for studying shapes of natural formations such as snowflakes and honeycombs.

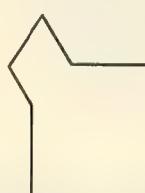
Mathematician Benoit Mandelbrot claims that Gustave Eiffel used formulas similar to the "Sierpinski Arrowhead" to design the Eiffel Tower. To check this out, type in Listing 1, CURVE.BAS, check it with TYPO II and SAVE a copy before you RUN it.

This impressive display of Sierpinski's curves follows a very simple "search-and-replace" rule:

1. We start with a shape that looks like this:



2. Search for all shapes that look like this:



continued on page 24

"The most useful program for the Atari since Print Shop!"™

FORMS GENERATOR

for the Atari 800, 800XL, 65XE, 130XE

Designed by Jeff Brenner, columnist for *Computer Shopper* magazine, of "Applying The Atari" fame, and author of book and magazine articles in *COMPUTE!*, *ANALOG* and others.

LOOK WHAT YOU CAN DO WITH FORMS GENERATOR: Purchase merchandise by mail? Next time, send a customized purchase order form! Does your home or business ever need statements, invoices, proposals, job work orders, gift certificates, etc.? No problem! Use FORMS GENERATOR's scrolling spreadsheet-style screen to design almost any form to suit your exact needs. What you see on-screen is what you get on paper! Use the text mode with any 80-column printer, or the high-res graphics mode with the Epson, Gemini/Star, Okidata, Panasonic or Prowriter for remarkably realistic forms. BUT THAT'S JUST THE BEGINNING: Once you've designed a form, you can program FORMS GENERATOR to make all calculations automatically! Imagine: after you enter quantities, descriptions and prices, FORMS GENERATOR moves about the form calculating extended prices, subtotals, and even the sales tax! Like magic! (Sample invoices included). You can also use FORMS GENERATOR for record keeping, since you can save filled forms to disk!

Read what our customers have written: "Excellent... easy to use and ran perfectly..." T.W. Wethersfield, Connecticut; "I was most impressed with your FORMS GENERATOR program..." J.E. King, South Carolina; "Love it!" C.R. Cortland, Ohio. Our "down to planet Earth" price: Only \$23.95 (product #ATA611).

VISA/MASTERCARD or C.O.D. orders CALL TOLL FREE (24 HOURS) 1-800-346-8000 (Operators can only take orders). Or send coupon below.

Send coupon to:

Twenty-Fifth
Century™



Software Division
Dept. AT 1
234 Fifth Avenue
Suite 301
New York NY 10001

YES! Please rush me FORMS GENERATOR (product #ATA611) with complete documentation, 90-day free replacement warranty, full customer service support and 20-page Atari software catalog. I am enclosing \$23.95 + \$2.74 (for first class shipping and handling.)

Check/Money Order enclosed C.O.D. (add \$2.50)
 MasterCard Visa

Name _____

Address _____

City _____ State _____ Zip _____

Card No. _____ Exp. Date _____

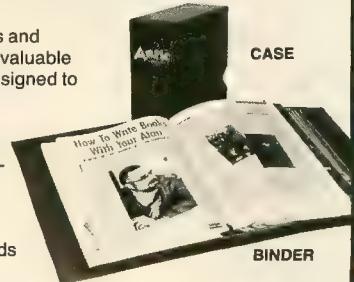
Signature _____ Phone # _____

*The Print Shop and Atari are registered trademarks of Broderbund Software and Atari Corp., respectively. Prices and availability subject to change without notice.

CIRCLE 019 ON READER SERVICE CARD

SAVE YOUR COPIES OF ANTIC

GREAT GIFT IDEA!
These custom-made titled cases and binders are ideal to protect your valuable copies from damage. They're designed to hold a year's issues constructed with reinforced board and covered with durable leather-like material in maroon. Title hot-stamped is gold. Cases are V-notched for easy access, binders have special spring mechanism to hold individual rods which easily snap in.



Cases: 1-\$7.95 3-\$21.95 6-\$39.95
Binders: 1-\$9.95 3-\$27.95 6-\$52.95

ANTIC

Jesse Jones Industries, Dept. ATC • 499 East Erie Avenue, Philadelphia, PA 19134

Enclosed is \$ _____ for _____ Cases; _____ Binders.
Add \$1 per case/binder for postage & handling. Outside USA \$2.50 per case/binder (US funds only). PA residents add 6% sales tax.

Print Name _____

Address _____ No. P.O. Box Numbers Please

City _____

State/Zip _____

CHARGE ORDERS (Minimum \$15): AmEx, Visa, MC, DC accepted.

Send name, number, exp. date.

CALL TOLL FREE 7 Days, 24 Hours 1-800-972-5858

SATISFACTION GUARANTEED

When you want to talk Atari

XL/XE HARDWARE

INTERFACES

ICD	
P:R Connection.....	\$58.99
Printer Connection.....	39.99
Supra	
Microprint.....	29.99
1150.....	38.99
1151 (1200 XL).....	39.99
Xetec	
Graphix Interface.....	38.99
Atari	
850 Interface.....	109.00

COMPUTERS



Atari 130XE \$129

65 XE.....	94.99
800 XL.....	Call
130 XE Package (Indus GT Drive, XMM801 Printer, Joystick & Diskettes).....	499.00

XL/XE ENHANCEMENTS

Axlon 32K Memory Board (400/800)....	19.99
Atari 80 Column Card.....	84.99

MODEMS

Atari	
SX212 300/1200 (ST).....	87.99
835.....	19.99
XMM301.....	42.99
Anchor	
VM520 300/1200 ST Dir. Con.....	119.00
Volksmodem 1200.....	99.99
Avatex	
1200 HC.....	99.99
2400.....	219.00
Supra	
2400 AT (XL/XE).....	159.00
2400 ST (ST).....	159.00

ST HARDWARE



1040 RGB/Color System

CALL

Includes: 1040ST, 1 mb RAM with 3½" drive built-in, 192K ROM with TOS, Basic, power supply and 1224 color monitor.

1040 Monochrome System..... 759.00

1040 Computer (no monitor)..... 629.00

520ST FM Monochrome System (Includes: 520ST, internal drive, modulator, mouse Basic and monochrome monitor)..... call

520ST FM RGB/Color System 789.00

SM124 Monochrome Monitor..... 149.00

SM1224 Color Monitor..... 289.00

Call for current pricing on
the new Atari Product Line

DRIVES

Atari

XF551 Drive (XL/XE)..... 179.00

SHD204 20 Meg Hard Drive (ST)..... 549.00

AA314 DS/DD Disk (ST)..... 199.00

AA354 SS/DD Disk (ST)..... 125.00



Indus GT Disk Drive (XL/XE)

\$179

Indus

GTS100 Drive (ST)..... 209.00

Supra

20 Meg Hard Drive (XL/XE)..... 649.00

20 Meg Hard Drive (ST)..... 539.00

30 Meg Hard Drive (ST)..... 699.00

PRINTERS

Atari

1020 XL/XE..... \$31.99

XXM804 ST 179.00

XMM801 XL/XE..... 189.00



Atari XDM121 Letter Quality XL/XE \$159

Brother

M-1109 100 cps (80 col.) 189.00

M-1409 180/45 NLQ w/tractor 299.00

HR20 22 cps Daisywheel 339.00

Citizen

MSP-10 (80 col.) 269.00

Premier 35 cps Daisywheel 469.00

MSP-15 40/160 cps 379.00

Epson

LX-800 150 cps 80 col..... Call

FX-86E 240 cps 80 col..... Call

FX-286E 240 cps 132 col..... Call

EX-800 300 cps 80 col..... Call

LQ-800 180 cps 24 wire..... Call

HI-80 4 pen plotter..... Call

NEC

P660 (180 cps draft/65 LQ)..... 459.00

P760 132 col (180 cps draft/65 LQ)..... 609.00

Okidata

Okimate 20 129.00

ML-182, ML-192, ML-193..... Call

ML-292, ML-293..... Call

Panasonic

KX-1080i 144 cps 80 col..... 169.00

KX-1091ii 194 cps 132 col..... 189.00

KX-1092 240 cps 80 col..... 319.00

1595 200 cps 132 col..... 449.00

Star Micronics

NP-10 100 cps 80 col 139.00

NX-10 120 cps 80 col 159.00

NX-15 120 cps 132 col 319.00

ND-15 180/45 NLQ 419.00

Toshiba

P321SL 216 cps 24 Pin..... 539.00



COMPUTER MAIL ORDER

.....you want to talk to us.

XL/XE SOFTWARE



F-15 Strike Eagle \$21.99

Access	
Leaderboard Golf.....	\$24.99
Executive Disk.....	14.99
Accolade	
Hardball.....	17.99
Atari	
Atari Writer Plus.....	35.99
Various Titles from.....	2.99
Batteries Included	
Paperclip w/Spellpack.....	37.99
Home Pack.....	23.99
Broderbund	
Printshop.....	25.99
Karateka Companion.....	20.99
Cygnus	
Starfleet I.....	31.99
Datasoft	
221 Baker St.....	19.99
Electronic Arts	
Touchdown Football.....	12.99
Chessmaster 2000.....	25.99
Infocom	
Zork III.....	24.99
Microprose	
Top Gunner.....	17.99
Gunship.....	22.99
Silent Service.....	22.99
Origin Systems	
Ultima 4.....	36.99
Roklyn SPECIAL	
Gorf/Wizard of Wor/AT Deluxe	
Anti-Sub/Journey to Planet (ea.).....	3.99
Strategic Simulations	
Gemstone Warrior.....	11.99
Sublogic	
Flight Simulator II.....	31.99
Scenery California.....	14.99
X-Lent	
Typesetter.....	19.99

ACCESSORIES

Maxell

MD1-M SS/DD 5 1/4"	\$8.49
MD2-DM DS/DD 5 1/4"	9.49
MF1-DDM SS/DD 3 1/2"	12.49
MF2-DDM DS/DD 3 1/2"	18.49

Sony

MD1D SS/DD 5 1/4"	7.99
MD2D DS/DD 5 1/4"	9.49
MFD-1DD SS/DD 3 1/2"	12.49
MFD-2DD DS/DD 3 1/2"	19.49

Allsop Disk Holders

Disk File 60-5 1/4"	9.99
Disk File 30-3 1/2"	9.99

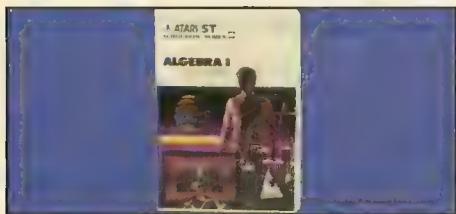
Curtis

Emerald.....	39.99
Safe Strip.....	19.99
Universal Printer Stand.....	14.99
Tool Kit.....	22.99

ICD (XL/XE)

Sparta DOS Construction Set.....	28.99
US Doubler/Sparta DOS.....	47.99
Real Time Clock.....	48.99
Rambo XL.....	28.99
Multi I/O Board 256K.....	169.00
Multi I/O Board 1 Meg.....	299.00

ST SOFTWARE



Atari Algebra I Grade 5 \$16.99

Access

Leaderboard Golf.....	24.99
-----------------------	-------

Activision

Music Studio.....	31.99
-------------------	-------

Antic

Flash.....	29.99
------------	-------

Batteries Included

Degas Elite.....	45.99
------------------	-------

Thunder

Thunder.....	25.99
--------------	-------

Cygnus

Starfleet I.....	33.99
------------------	-------

ST SOFTWARE

DAC

Easy Accounting.....	\$41.99
----------------------	---------

Electronic Arts

Gridiron Football/Auto Duel.....(ea.)	32.99
---------------------------------------	-------

Firebird

Guild of Thieves.....	26.99
-----------------------	-------

Infocom

Zork Trilogy.....	40.99
-------------------	-------

Michtron

Major Motion.....	25.99
-------------------	-------

Microprose

Silent Service.....	23.99
---------------------	-------

Miles Software

ST Wars.....	28.99
--------------	-------

Mark Williams

C.....	129.00
--------	--------

OSS

Personal Pascal.....	45.99
----------------------	-------

Paradox

War Zone/Firebuster.....	26.99
--------------------------	-------

Progressive Computer

Graphic Artist 1.5.....	139.00
-------------------------	--------

Psynopsis

Deep Space.....	26.99
-----------------	-------

Sierra

Winnie The Pooh.....	15.99
----------------------	-------

Strategic Simulations

Rings of Zilfin.....	23.99
----------------------	-------

Sublogic

Flight Simulator II.....	32.99
--------------------------	-------

Timeworks

Swiftcalc/Wordwriter.....(ea.)	47.99
--------------------------------	-------



Unison World Printmaster Plus

\$23.99

VIP

Professional (GEM).....	144.99
-------------------------	--------

X-Lent

Typesetter.....	28.99
-----------------	-------

In the U.S.A. and in Canada

Call toll-free: 1-800-233-8950

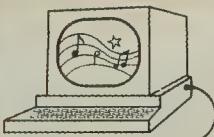
Outside the U.S.A. call 717-327-9575, Telex 5106017898, Fax 717-327-1217

Educational, Governmental and Corporate Organizations call toll-free 1-800-221-4283

CMO. 477 East Third Street, Dept. B6, Williamsport, PA 17701

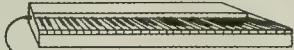
ALL MAJOR CREDIT CARDS ACCEPTED.

POLICY: Add 3% (minimum \$7.00) shipping and handling. Larger shipments may require additional charges. Personal and company checks require 3 weeks to clear. For faster delivery use your credit card or send cashier's check or bank money order. Pennsylvania residents add 6% sales tax. All prices are U.S.A. prices and are subject to change and all items are subject to availability. Defective software will be replaced with the same item only. Hardware will be repaired at our discretion within the terms and limits of the manufacturer's warranty. We cannot guarantee compatibility. All sales are final and returned shipments are subject to a restocking fee.



SERIOUS SOFTWARE FOR THE SERIOUS MUSICIAN

Dr. T's™ MUSIC SOFTWARE



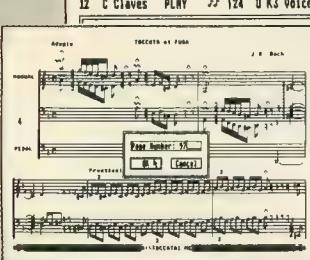
220 Boylston Street, Suite 306 • Chestnut Hill, MA 02167 • (617) 244-6954

ATARI ST KEYBOARD CONTROLLED SEQUENCER WITH PVG

TRACK-MODE RECORD/PLAY

OPEN-MODE EDIT

TRACK	NAME	STATUS	PUN	TRACK	NAME	STATUS	PUN	TRACK	NAME	STATUS	PUN
1	1 BassDrum	PLAY	JJ	13	D MidBass	PLAY	JJJJJ	25	P CZ Brass	PLAY	
2	2 SnareDrum	PLAY	JJJJJ	14	E Mirage 1	PLAY	JJ	26	O CZ Obsr	PLAY	JJ
3	3 HiHat	PLAY	JJJJJ	15	F Mirage 2	MUTE		27	R CZ Sitar	PLAY	JJJJJ
4	4 HighTom	MUTE		16	G Mirage 3	PLAY	JJ	28	S CZLogDrm	PLAY	RECORD
5	5 MedTom	PLAY		17	H Mirage 4	MUTE		29	I		
6	6 LowTom	PLAY		18	Z DX7 Stab	PLAY	JJJJJ	30	J		
7	7 Cymbals	PLAY		19	J TX7 Svir	PLAY	JJJJJ	31	K		
8	8 Cowbell	PLAY	JJ	20	L TX7 Bras	MUTE		32	M		
9	9 Congos	PLAY	JJJJJ	21	N S9805Drm	PLAY	JJJJJ	33	X		
10	10 Timbales	MUTE		22	P S9806Drn	PLAY	JJJJJ	34	Z		
11	11 B Tablas	PLAY	JJJJJ	23	Q S9806Drn	MUTE	JJJJJ	35	1		
12	12 C Claves	PLAY	JJ	24	R K3 Voice	PLAY	JJJJJ	36	2		
13	13 D MidBass	PLAY	JJJJJ	25	S CZ Brass	PLAY		37	3		
14	14 E Mirage 1	PLAY	JJ	26	O CZ Obsr	PLAY	JJ	38	4		
15	15 F Mirage 2	MUTE		27	R CZ Sitar	PLAY	JJJJJ	39	5		
16	16 G Mirage 3	PLAY	JJ	28	S CZLogDrm	PLAY		40	6		
17	17 H Mirage 4	MUTE		29	I			41	7		
18	18 Z DX7 Stab	PLAY	JJJJJ	30	J			42	8		
19	19 J TX7 Svir	PLAY	JJJJJ	31	K			43	9		
20	20 L TX7 Bras	MUTE		32	M			44	10		
21	21 N S9805Drm	PLAY	JJJJJ	33	X			45	11		
22	22 P S9806Drn	PLAY	JJJJJ	34	Z			46	12		
23	23 Q S9806Drn	MUTE	JJJJJ	35	1			47	13		
24	24 R K3 Voice	PLAY	JJJJJ	36	2			48	14		
25	25 S CZ Brass	PLAY		37	3			49	15		
26	26 O CZ Obsr	PLAY	JJ	38	4			50	16		
27	27 R CZ Sitar	PLAY	JJJJJ	39	5			51	17		
28	28 S CZLogDrm	PLAY		40	6			52	18		
29	29 I			41	7			53	19		
30	30 J			42	8			54	20		
31	31 K			43	9			55	21		
32	32 M			44	10			56	22		
33	33 X			45	11			57	23		
34	34 Z			46	12			58	24		
35	35 1			47	13			59	25		
36	36 2			48	14			60	26		
37	37 3			49	15			61	27		
38	38 4			50	16			62	28		
39	39 5			51	17			63	29		
40	40 6			52	18			64	30		
41	41 7			53	19			65	31		
42	42 8			54	20			66	32		
43	43 9			55	21			67	33		
44	44 10			56	22			68	34		
45	45 11			57	23			69	35		
46	46 12			58	24			70	36		
47	47 13			59	25			71	37		
48	48 14			60	26			72	38		
49	49 15			61	27			73	39		
50	50 16			62	28			74	40		
51	51 17			63	29			75	41		
52	52 18			64	30			76	42		
53	53 19			65	31			77	43		
54	54 20			66	32			78	44		
55	55 21			67	33			79	45		
56	56 22			68	34			80	46		
57	57 23			69	35			81	47		
58	58 24			70	36			82	48		
59	59 25			71	37			83	49		
60	60 26			72	38			84	50		
61	61 27			73	39			85	51		
62	62 28			74	40			86	52		
63	63 29			75	41			87	53		
64	64 30			76	42			88	54		
65	65 31			77	43			89	55		
66	66 32			78	44			90	56		
67	67 33			79	45			91	57		
68	68 34			80	46			92	58		
69	69 35			81	47			93	59		
70	70 36			82	48			94	60		
71	71 37			83	49			95	61		
72	72 38			84	50			96	62		
73	73 39			85	51			97	63		
74	74 40			86	52			98	64		
75	75 41			87	53			99	65		
76	76 42			88	54			100	66		
77	77 43			89	55						
78	78 44			90	56						
79	79 45			91	57						
80	80 46			92	58						
81	81 47			93	59						
82	82 48			94	60						
83	83 49			95	61						
84	84 50			96	62						
85	85 51			97	63						
86	86 52			98	64						
87	87 53			99	65						
88	88 54			100	66						



MSR	ST	EVNT	TIME	CH	TYP	NOTE	VEL	dur
X	1	1	1	8	10	OH	FN	3
1	1	2	6	11	OH	B	84	11
1	1	3	6	11	OH	C	9	101
1	1	4	6	11	OH	D	4	2
1	1	5	6	10	OH	C	9	80
1	1	6	6	10	OH	B	8	1
1	1	7	6	10	OH	A	7	30
1	1	8	6	10	OH	E	8	1
1	1	9	6	10	OH	D	2	5
1	1	10	6	10	OH	C	2	12
1	1	11	6	10	OH	B	1	10
1	1	12	6	10	OH	A	1	10
1	1	13	6	10	OH	E	1	10
1	1	14	6	10	OH	D	1	10
1	1	15	6	10	OH	C	1	10
1	1	16	6	10	OH	B	1	10
1	1	17	6	10	OH	A	1	10
1	1	18	6	10	OH	E	1	10
1	1	19	6	10	OH	D	1	10
1	1	20	6	10	OH	C	1	10
1	1	21	6	10	OH	B	1	10
1	1	22	6	10	OH	A	1	10
1	1	23	6	10	OH	E	1	10
1	1	24	6	10	OH	D	1	10
1	1	25	6	10	OH	C	1	10
1	1	26	6	10	OH	B	1	10
1	1	27	6	10	OH	A	1	10
1	1	28	6	10	OH	E	1	10
1	1	29	6	10	OH	D	1	10
1	1	30	6	10	OH	C	1	10
1	1	31	6	10	OH	B	1	10
1	1	32	6	10	OH	A	1	10
1	1	33	6	10	OH	E	1	10
1	1	34	6	10	OH	D	1	10
1	1	35	6	10	OH	C	1	10
1	1	36	6	10	OH	B	1	10
1	1	37	6	10	OH	A	1	10
1	1	38	6	10	OH	E	1	10
1	1	39	6	10	OH	D	1	10
1	1	40	6	10	OH	C	1	10
1	1	41	6	10	OH	B	1	10
1	1	42	6	10	OH	A	1	10
1	1	43	6	10	OH	E	1	10
1	1	44	6	10	OH	D	1	10
1	1	45	6	10	OH	C	1	10
1	1	46	6	10	OH	B	1	10
1	1	47	6	10	OH	A	1	10
1	1	48	6	10	OH	E	1	10
1	1	49	6	10	OH	D	1	10
1	1	50	6	10	OH	C	1	10
1	1	51	6	10	OH	B	1	10
1	1	52	6	10	OH	A	1	10
1	1	53	6	10	OH	E	1	10
1	1	54	6	10	OH	D	1	10
1	1	55	6	10	OH	C	1	10
1	1	56	6	10	OH	B	1	10
1	1	57	6	10	OH	A	1	10
1	1	58	6	10	OH	E	1	10
1	1	59	6	10	OH	D	1	10
1	1	60	6	10	OH	C	1	10
1	1	61	6	10	OH	B	1	10
1	1	62	6	10	OH	A	1	10
1	1	63	6	10	OH	E	1	10
1	1	64	6	10	OH	D	1	10
1	1	65	6	10	OH	C	1	10
1	1	66	6	10	OH	B	1	10
1	1	67	6	10	OH	A	1	10
1	1	68	6	10	OH	E	1	10
1								

American Techna-Vision

For Orders Only - 1-800-551-9995
CA. Orders / Information 415-352-3787

"Providing 8 Bit support with one of the Worlds largest inventories of Atari replacement parts"

- No surcharge for VISA/MasterCard
- Your card is not charged until we ship

800 4 PIECE BOARD SET

Includes Main Board, Power Supply Assembly, CPU Module and 10K Revision B Operating System Module. All boards are new, tested and complete with all components.

\$28.50

1050 MECHANISM

Factory fresh TANDON mechs. make difficult repairs a snap. Units are complete with Head, Stepper, Spindle motor etc. Just plug in, no difficult alignments or adjustments required.

\$47.50

PILOT PROGRAMMING LANGUAGE PACKAGE

Includes PILOT cart. with "Turtle Graphics", Pilot Primer and Student Pilot manuals. PILOT is an excellent learning or teaching tool. Works with all Atari's except ST.

\$27.50

POWER PACKS

Exact replacement transformer for 800/400, 1050, 810, 1200XL, 850 and 1020 units. Replaces older "weaker" units. Atari part #CO17945.

\$14.50

400 3 PIECE BOARD SET

Includes Main Board, Power Supply Assembly and CPU Module. All boards are new, tested and complete with all components.

\$19.50

810 DISK DRIVE

Standard 810 assembled on Aluminum base. No exterior case. Includes I/O Cable and Power Supply. Works with all 8 bit Atari's with more than 32K memory.

Same unit in plastic case \$120.00

\$99.00

ATARIWRITER CARTRIDGE

Popular cartridge version turns any 8 bit Atari into a powerful word processor. Written by Atari. Disk drive supported but not required.

For all Atari's except ST

\$29.95

600XL 64K UPGRADE

Easy to install internal modification allows you to hook up a disk drive and run all 800XL software. Kit includes all parts and detailed instructions. Soldering required to install 3 jumpers.

\$29.95

800 10K "B" O.S. Module

Older 800 units need the revision "B" Operating system to run newer software. Type the following peek in BASIC to see which revision you have. PRINT PEEK(58383).

\$9.50

If the result is 56 order now!

800/400 MODULES

NEW PARTS COMPLETE WITH IC'S

\$9.50 EACH

- 800 Main Board
- 800/400 CPU with GTIA
- 800 10K "B" O.S. Module
- 400 Main Board
- 800 Power Supply Board
- 400 Power Supply Board

16K Ram Module **\$14.50**

INTEGRATED CIRCUITS

- CPU..... CO14806
- POKEY.... CO12294
- PIA..... CO14795
- GTIA..... CO14805
- ANTIC.... CO12296
- CPU..... CO10745
- PIA..... CO10750
- CPU..... CO14377
- DELAY.... CO60472

\$4.50 EACH

MORE IC'S

CO60302 XL BASIC ROM	\$13.50
1050 O.S. ROM	\$13.50
2793 1050 FDC	\$19.50
CO10444 2600 TIA	\$4.50
1771 810 FDC	\$10.00
1050 5713 STEP DRIVER	\$5.25

REPAIR MANUALS

SAMS Service Manuals for the following units contain schematics, parts lists, labelled photographs showing the location of checkpoints and more! A special section gives oscilloscope and logic probe readings allowing you to narrow the malfunction down to a specific chip or transistor!

800, 800XL, 130XE, 400, and 1050. \$19.50 each.
520ST Service Manual. \$37.50

MISC. HARDWARE

1050 Track 0 Sensor ... \$6.50
1050 Stepper Motor ... \$14.50
1030 Power Pack ... \$12.50
Fastchip for 800/400 ... \$15.50
Atari Joystick \$7.00
850 or PR Modem Cable \$14.50
850 or PR Printer Cable \$12.50
P:R: Connection \$65.00
Printer Interface \$39.50
1050 Happy Mod. \$139.50
LOGO cart. only \$20.00
I/O 13 Pin PC mount ... \$4.50
I/O 13 Pin Plug Kit \$4.50
ST 6' Drive Cable \$14.00
820 Printer Mechanics. \$14.50

ATARI XM301 MODEM
Direct connect 300 BAUD modem works with all 8 bit Atari's. No separate interface required. \$44.95

GORF SPACE GAME

Well done cart. vers. of famous arcade game. 800/400 only. \$4.00

COMPUTER BOOKS

Inside Atari Basic \$5.00
Atari Basic Ref. manual. \$5.00
Mapping the Atari. \$18.50

CARTRIDGE MAKING SUPPLIES

16K Eeprom Board with case, uses two 2764's \$5.95
10 or more \$4.95 ea.
16K Eeprom Board with case, uses one 27128 \$6.95
10 or more \$5.95 ea.

PROBURNER EPROM PROGRAMMER

Eeprom burner in a cartridge, works with 800/400 & XL/XE computers. Programs 2716, 2732, 2732A, 2764, 27128, 2532 + EEPROMS 2816A, 52B13, 52B33, \$145.00
2764 EPROM \$3.95

BASIC CARTRIDGE

Basic Rev. "A" Cart. works with all Atari Computers except ST.

800XL Owners Note! Use this cartridge while programming to eliminate the severe errors in the built in "B" Basic. \$10.00

ADDITIONAL SOFTWARE

Pac-Man cartridge	\$4.00
Deluxe Invaders Cart.	\$4.00
Journey to the Planets	\$4.00
Miner 2049er cart.	\$10.00
Q*bert cartridge	\$10.00
Donkey Kong cart.	\$5.00
Wizard of War cart.	\$7.50
Crossfire cart.	\$5.00
Hard Hat Mack disk ...	\$10.00
D-Bug childware disk ...	\$10.00
Word Flyer childware.	\$10.00
Home filing manager ...	\$7.50
Springer Cartridge	\$5.00
O.S.S. Action	\$47.50
O.S.S. Mac-65	\$47.50
O.S.S. Basic XE	\$47.50
O.S.S. Basic XL	\$37.50

SERVICE RATES

Flat Service Rates below include Parts & Labor, 60 Day Warranty.

800 Computer	\$39.50
850 Interface	\$39.50
810 Disk Drive	\$69.50
1050 Disk Drive	\$75.00
400 Computer	\$39.50
800 Keyboard only	\$25.00

Include \$7.00 return shipping and insurance. Include \$4.00 shipping for 800 keyboard repair only.

CALL TOLL FREE

1-800-551-9995

IN CALIF. OR OUTSIDE U.S.

CALL 415-352-3787

AMERICAN TECHNA-VISION

(Formerly American T.V.)

Mail Order: 15338 Inverness St., San Leandro, Ca. 94579

Repair Center: 2098 Pike Ave., San Leandro, Ca. 94577

Terms: NO MINIMUM ORDER. We accept money orders, personal checks or C.O.D.s. VISA, MasterCard okay. Credit cards restricted to orders over \$20.00. No personal checks on C.O.D. - Shipping: \$4.00 shipping and handling on orders under \$150.00. Add \$2.00 for C.O.D. orders. In Canada total \$6.00 for shipping and handling. Foreign shipping extra. Calif. residents include 7% sales tax. All items guaranteed 30 days from date of delivery. No refunds or exchanges.

Prices subject to change without notice. Send SASE for free price list. Atari is a reg. trademark of Atari Corp.

CURRENT EVENTS

continued from page 18

Disrupter: Ouch! Causes the entire circuit to short out for six seconds, during which it's impossible to determine the color of *anything*. You'd better be aware of what the entire circuit looks like at all times so you'll know what to do when the lights go out.

STRATEGY

The simple goal of Current Events is to maximize the amount of circuitry covered with your color while minimizing the color territory of your opponent. Obviously, moving over either the untouched white circuit or your opponent's color is a lot better than repeating a path over your own color. Hitting an event box can be either good or bad. You'll just have to play the odds. In certain situations, even the disruptor can be beneficial—as can ramming your opponent. In short games, the event boxes can make or break you, while in a longer game you *may* have time to make up for your mistakes. ■

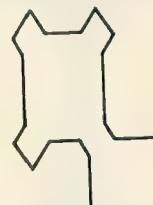
James Hague is a Computer Science major at North Texas State University. He has published two impressively demented Antic games—the memorable Uncle Henry's Nuclear Waste Dump (December, 1986) and Rockslide (May, 1986) as well as the powerful Rainbow Screen Customizer utility (March, 1987).

Listing on page 69

SIERPINSKI CURVES

continued from page 19

3. Replace each one with a shape that looks like this:

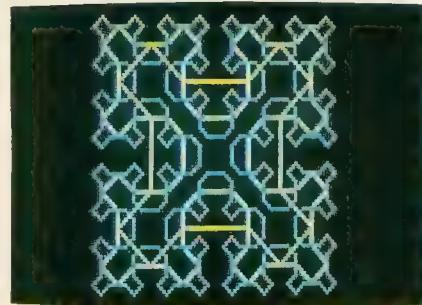


4. Return to Step 2 and apply our "search-and-replace" rule to all the new angles we just formed.

What you end up with is a fascinating color display in

Graphics 7+16. The previously mentioned **Antic** article *Fractals for Your Atari* (April 1986) provides a detailed explanation of how to adjust mathematical formulas in your programs to obtain different visual effects. ■

Listing on page 65



BRAND NEW ATARI 520ST FM MONO SYSTEM only \$299

with trade-in of 1050 drive or \$159 with 800XL computer.

Add \$145 for color systems.

BRAND NEW ATARI ST 20MB HARD DRIVE
ONLY \$499 with trade-in of SF314 drive.

BRAND NEW ATARI SX551 360K DRIVE
ONLY \$119 with trade-in of
1050 drive or \$159 with 800XL computer.

FREE BRAND NEW AVATEX 1200 HC or
AVATEX 2400HC for \$89 with
trade-in of working Atari 800XL computer
and 1050 drive.

We carry the full line of Atari products.

NEW PRODUCTS

	ST, PC, MORE
Atari 520ST FM Mono System	\$679
Atari 520ST FM Color System	\$825
SH204 20MB ST drive	\$625
SC1224 Color Monitor	\$299
	1 Meg RAM Upgrade COMPLETE ... \$119 Atari SF314 Drive \$229 SM124 Mono Monitor \$149 And much, much more!!!

DRIVES & MORE

Indus GT 180K.....	\$185	SX551 360K.....	\$199	1802C Color	\$189
				MODEMS	

Avatex 1200	\$ 85	Avatex 2400hc	\$189	SmartLink 2400hc	\$189
Avatex 1200hc	\$ 109	Atari SX212	\$109	XM301 Modem.....	\$ 45

PRINTERS

Star NX-10.....	\$169	Sar NP-10	\$149	Full line of STAR!
Star NB-15, 300cps, 100 cps LQ, IBM/EPSON Compatible	\$799			
Star NB-2410, 216cps, 72 cps LQ, IBM/EPSON Compatible	\$475			
Star ND-10, 180cps, 45 cps NLQ, IBM/EPSON Compatible	\$349			

UPGRADES

Happy Rev 7 1 w/cont..	\$99	256K XL RAM UG ..	\$ 56	256K 800 RAM UG
320K XE RAM UG ..	\$ 49	Printer Connection ..	\$ 45	100% Axlon
US Doubler	\$ 29	ICD MIO 256K	\$169	UD Doubler w/DOS .. \$ 49
576K XE RAM UG ..	\$ 79	P.R:Connection ..	\$ 59	ICD DOS X
R-Time 8 Cart	\$ 49	ICD MIO 1 MEG	\$289	Call for details

PC COMPATIBLES

PC XT Compatible — Dual mono Hercules & Color (CGA) compatible graphics card, 4 77/10 Mhz Phoenix BIOS. More than 3x as fast as the IBM XT, 640 K Ram, 360K drive, Printer/Modem/Game ports, Clock/calendar, AT Style keyboard and case. Only \$619*
*Add \$89 for monochrome monitor, add \$269 for RGB Color monitor. Hard drives: Miniscribe 30MB w/cont \$369, 20 MB w/cont \$339 installed

We want to trade for YOUR EQUIPMENT!

If your equipment is not mentioned, then call us now for an instant quote.

We pay cash for damaged equipment!

All used products are guaranteed to be in good working condition.

USED PRODUCTS

520ST Color Sys	\$659	SM124 Mono Mon ...	\$119	SC1224 Color Mon ..	\$239
SF354 Drive	\$ 99	800XL Computer	\$ 64	400-16k Computer ..	\$ 29
Indus GT Drive	\$145	Atari 1025 Printer	\$ 79	Color Monitors from \$129	
Printers from	\$39	Joysticks from	\$ 2	Hundreds of Software Titles!	

*All references to trade-ins in our ad assume equipment to be in good working condition. Shipping/handling will be added to all prices
Call for shipping and handling

2017 13th St., Suite A
Boulder, CO 80302

Computer Repents, Inc.

MAIL-ORDER DIVISION

VOICE: (303) 939-8144

MODEM (303) 939-8174

MASTERCARD/VISA/CHOICE/C.O.D.

Arcade Delights

Autoduel, Cycle Knight, Ace of Aces and Bop 'N Wrestle



CYCLE KNIGHT

Cycle Knight is a combination of Dungeons & Dragons and Easy Rider that puts you atop a medieval motorcycle on a mission to rescue the queen and her loyal subjects. Up to four players have fuel, ammunition, an old map, and several lillies, frogs and toads—considered tasty by the strange people you'll meet—plus three extra lives, in the form of birth certificates. You'll need those as you pass through 10 tough chambers in the castle.

Even the first chamber is no day under the boardwalk. You must “rescue” clamoring villagers—by running them over with your motorcycle. Then you must get past a serf. Don’t run him down, you’ll die. Just turn him into a toad with your ion bullets and *then* run over him.

Attempts at an “Olde English” atmosphere don’t help the game. Also, don’t be surprised if half your deaths are due to unreasonable cycle response to reasonable joystick movement.

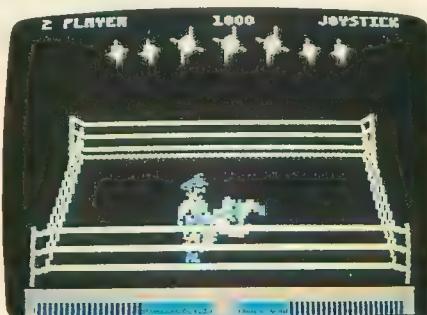
However, Cycle Knight’s interesting language simulator lets you “click on” words with the joystick. For instance, to get a guard’s attention, click on GUARD and TALK. Then offer him some toads by moving the pointer to the number indicator and pressing the trigger while moving the joystick up or down. He’ll gulp down the toads

and belch with delight. Then click on I WISH, PASS and TALK. He’ll let you pass. You can talk to Serfs, Guards and Lords, or Wizards who look like members of ZZ Top. Each can be swayed with different gifts—and each is easily insulted.

Cycle Knight has interesting graphics and provides endless random variations. It does indeed have amusing aspects—but you’re likely to be frustrated as well as being amused.—GREGG PEARLMAN

\$29.95, 48K disk. Artworx Software, 1844 Penfield Road, Penfield, NY 14526. (312) 480-7667.

CIRCLE 196 ON READER SERVICE CARD



BOP 'N WRESTLE

Bop 'N Wrestle is an unintentionally realistic simulation of professional wrestling—displaying clumsy, slow-moving figures in confusing action.

Your joystick-controlled wrestler, Gorgeous Greg, is supposed to have seven series of four movements each. Depending on the situation, pressing the button and moving the stick left could mean to either knee your opponent, clothesline him (smack with your extended forearm), “suplex” (forcefully invite your opponent to lie on the canvas), “reverse suplex” (“flip him up and over like a giant pendulum,” says the manual) or

elbow drop. Assault techniques also include propeller-spinning your opponent, kicking him in the stomach and stomping his head—all humorously described by the manual.

The main difficulty with Bop 'N Wrestle is simply getting Gorgeous Greg to cooperate with your joystick movements. The angled perspective of the “3-D” screen is misleading, and Gorgeous might just run right past his opponent instead of clobbering him as instructed. You might think that a situation calls for a body slam, only to find yourself simply grabbing your opponent, who will probably hug you back affectionately for a second or two before pinning you.

Your nine opponents include Lord Toff, the most dangerous wrestler alive today, Bad Barney Trouble, who lives to cause pain (“I love to hear them choking—it gives me a real buzz!”), and Molotov Mike, who regularly smashes blocks of ice with his head.—GREGG PEARLMAN

\$29.95, 48K disk. Mindscape Inc., 3444 Dundee Road, Northbrook, IL 60062. (312) 480-7667.

CIRCLE 197 ON READER SERVICE CARD

AUTODEUEL

Autoduel caused me to skip meals (and consider skipping work) as I carried microchips and biohazards—determined to make deadlines and not be blown away by the toughest road warriors since Mad Max. While I battled the hordes of cars, motorcycles and killer vans, I was ever mindful that if successful, I might be called to help the FBI exterminate “Mr. Big,” the sinister force behind the evil that ensnares the roads of the Northeast Corridor in the 21st century.

continued on page 28

COMPUTER DIRECT
Will Not Be UNDERSOLD!
AND WE MEAN IT!*

Prices Expire 2-29-88

Super Hi-Speed Printer

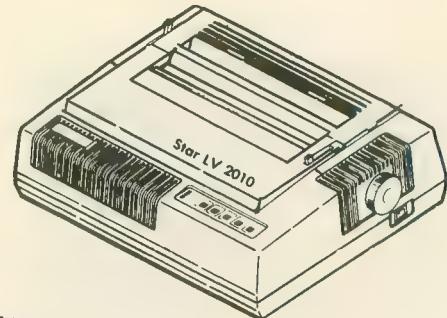
200 CPS Star Micronics LV-2010 With Crisp Near Letter Quality

Sale \$199.95

(Add \$10.00 shipping.*)

List \$499

No One Sells This Printer For Less!



- 200 CPS Draft - 45 CPS Near Letter Quality
- Serial Impact Dot Matrix
- IBM Compatible
- Continuous Underline
- Near Letter Quality Mode
- Ultra High Resolution Bit Image Graphics
- Pull Tractor & Automatic Single Sheet Loading
- Standard Serial & Centronics Parallel Ports



Ultra Hi-Speed (300 CPS) Printer

300 CPS Draft • 50 CPS NLQ • With Color Printing Capabilities

No One Sells This Printer For Less!

Sale \$299.95

(Add \$10.00 shipping.*)

List \$499



- 300 CPS Draft - 50 CPS Near Letter Quality
- Front Panel Margin Setting
- Download Character Setting
- Epson/IBM Modes • 10K Buffer
- Variety Of Characters & Graphics
- Parallel & Serial Interface Ports
- Auto Paper Load & Ejection • Bottom Feed
- Optional 7-Color Printing Kit... Sale \$99.95

15 Day Free Trial • 90 Day Immediate Replacement Policy

COMPUTER DIRECT

2229 N. Pepper Rd, Barrington, IL. 60010
Call (312) 382-5050 To Order!

* Illinois residents add 6 1/4% sales tax. All orders must be in U.S. Dollars. We ship to all points in the U.S., CANADA, PUERTO RICO, & APO-FPO. Please call for charges outside continental U.S. or C.O.D. MAIL ORDERS enclose cashier check, money order, or personal check. Allow 14 days delivery, 2 to 7 days for phone orders and 1 day express mail. Prices and availability subject to change without notice. (Monitors only shipped in continental U.S.). COMPUTER DIRECT will match any valid nationally advertised delivered price on the exact same product with a comparable payment method (excluding any applicable sales taxes). A physical copy order of the current valid lower priced ad must be supplied with the order, or within 15 days of date of purchase.

VISA — MASTERCARD — C.O.D.

COMPUTER DIRECT

Is 1st In PRICE, SUPPORT, & GUARANTEE!

WE LOVE OUR CUSTOMERS!

Prices Expire 2-29-88

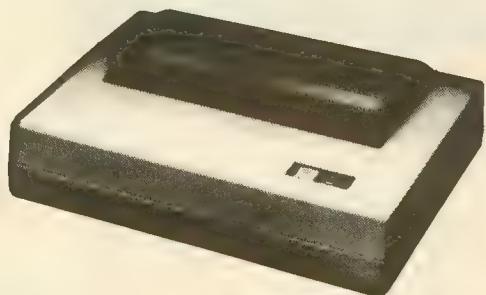
Genuine IBM® 8½" Printer

8½" Letter Size • 80 Column • Limited Quantities

Sale \$49.95

(Add \$7.50 shipping.*)

List \$199



No One Sells This Printer For Less!

- Unbelievable Low Price
- Advanced Dot Matrix - Heat Transfer
- Upper & Lower Case (With True Lower Descenders)
- Underline • Enlarged
- Graphics With Commodore, Apple & Atari Interfaces
- Ready to Hook Up To Serial Port Of IBM® PCjr
- Low Cost Adapters For IBM®, Apple, Commodore, Laser, & Atari Computers



22 CPS Daisy Wheel Printer

13" Daisy Wheel Printer With True Letter Quality

Sale \$99.95

(Add \$10.00 shipping.*)

List \$499



No One Sells This Printer For Less!

- Daisy Wheel Printing With True Letter Quality
- 22 CPS, AAA Text
- Below Wholesale Cost
- 13" Wide Carriage
- Both Daisy Print Wheel & Ribbons Compatible with Diablo™ & Qume®
- Single Sheet or Continuous Feed



15 Day Free Trial • 90 Day Immediate Replacement Policy

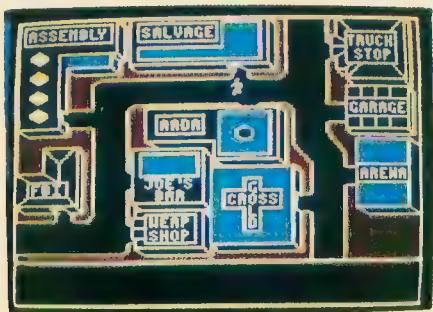


(312) 382-5050
We Love Our Customers!

CIRCLE 037 ON READER SERVICE CARD



COMPUTER DIRECT
22292 N. Pepper Road
Barrington, IL. 60010



Based on Steve Jackson's board game, Car Wars, Autoduel is a great implementation for the home computer. You start as a pedestrian with \$2,000. Since success depends on having the biggest guns, you must first make enough money to put a death-mobile on the road. To do this, you can participate in a free "Amateur Night" at an arena, where you battle other amateurs in a stripped-down car. Putting them all out of commission earns you \$1,500. If not, you must start from scratch. Since it's easy to die in the arena, you might try the casino in Atlantic City and play poker or blackjack.

Once you have some money, you can custom-design your car at the assembly plant. Because of the variety of vehicles you can build, the game has great replay value. But no matter what type of vehicle you build, your enemies have an uncanny ability to attack your weakest point.

As you win battles and deliver packages, your abilities and prestige will grow. You are rated on these as well as driving ability, marksmanship and mechanical skill. The higher your rating, and more lucrative your choice of assignments.

Autoduel isn't perfect. If you have only one drive, be prepared for a great deal of disk-swapping. The graphics and colors don't really take advantage of the Atari's superior abilities, but you'll know what or where things are.—JOE FRANCSESE

\$49.95, 48K disk. Origin Systems, distributed by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. (415) 571-7991.

CIRCLE 198 ON READER SERVICE CARD

ACE OF ACES

Ace of Aces is excellent at giving you the feeling of being in the cockpit of a WWII fighter-bomber. Using joystick or keyboard you switch between front, side and bomb-bay views. Controls critical to flying the plane are located on side panels. Though Ace of Aces doesn't have the scenery graphics of other flight games, it gains points for the feeling of "being there" at the controls.

Scoring depends on how many enemy fighters and bombers, U-boats and trains you destroy. As you try to outposition and gun down the enemy, check on damage and adjust controls, you must switch between views of the engines and the forward, fighting view. This is an integral part of the game. World War II pilots didn't have heads-up displays, so neither do we. Warning bells sound when your plane sustains damage. To ignore warnings and the condition of your engines is to invite death in a ball of fire.

At the title screen, press the fire button for your briefing. Move the commander's pointer to choose a mission—dogfighting, bombing trains or U-boat bases, or shooting down bombers or V-1 rockets. Then select either mission or practice status. Once airborne, consult your map and head for the target. Before long you'll be attacked by an enemy fighter—either shoot him down or evade him. I highly recommend dogfighting practice.

Upon reaching your target, you'll have an arsenal of heavy bombs to drop. In attacking the U-boat base, speed is essential, because the subs start to submerge when they become aware of your attack. After unloading your bombs, the number of fighters challenging you will increase. Completing a mission is a real accomplishment.—JOHN MANOR ■

COPY II[®] ST

BACKUP PROTECTED SOFTWARE FAST.

From the team who brought you COPY II for the Apple, the Macintosh and the IBM comes a revolutionary new copy program for the Atari 520 and 1040 ST computers.

COPY II ST copies many protected programs automatically.

- Supports single and double sided drives.
- Includes a sector-based copier for fast, reliable copies of unprotected disks.
- Includes a bit copy mode for protected disks.

Requires an Atari 520 or 1040 ST computer with one or two drives.

Call 503/244-5782, M-F, 8-5
(West Coast time) with your in hand. Or send a check
for \$39.95 U.S. plus \$3 s/h, \$8
overseas.

\$39.95

Central Point Software, Inc.
9700 S.W. Capitol Hwy. #100
Portland, OR 97219

**Central Point
Software**
INCORPORATED

Backup utilities also available for the IBM, Apple II, Macintosh and Commodore 64.
This product is provided for the purpose of enabling you to make archival copies only.

CIRCLE 002 ON READER SERVICE CARD

\$29.95, 48K disk. Accolade, 20813 Stevens Creek Blvd. Cupertino, CA 95014. (408) 446-5757.

CIRCLE 199 ON READER SERVICE CARD

ATARI ST

PUBLISHING PARTNER™

CREATES LIKE A PUBLISHING COMPANY WITHOUT THE OVERHEAD

SOFT LOGIK NEWS

PUBLISHING PARTNER™ HELPS YOU CREATE!

You'll benefit by using your Atari ST to create professional quality journals, newsletters, ads, business cards, certificates, letterheads, logos, art designs, bar graphs, flow charts, even bumper stickers and all the forms you or anyone would ever need. Create just like a professional publishing company without the overhead! Publishing Partner is actually three programs in one--Word Processor, Page Layout, and Forms Creator. Expand your potential in becoming a better writer, artist and designer with your Publishing Partner.

WORD PROCESSING PAGE LAYOUT

What you see is what you get!

Combine text and graphics easily and quickly from existing or newly created documents. Position entire paragraphs or individual words exactly where you want them. Create one, or multiple color separations ready for printing.

Production time will never be the same--it will be much shorter!!

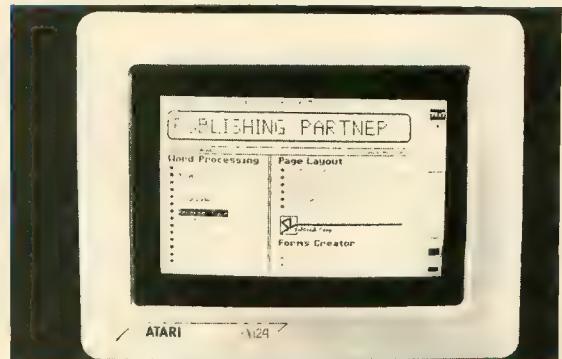
Just take a look at some of its features!

- * GEM based
- * Justifies right or left as you type
- * Edit Multiple Columns on One Screen
- * Search and Replace
- * User Definable Page Size
- * **Bold, underline, super and subscript**
- * *Italicize, shadow, outline*
- * **Reverse Image**
- * Backslant Characters
- * Mirror Image Invert Image
espmi 101111 juvsl jwsd8
- * Auto Headers/Footers, Page Numbers
- * Easily Move Text
- * Reads & Merges other files together
- * Sets Tabs
- * Macros
- * Vertical & Horizontal Printing

Whatever you require--cutting artwork from other programs, custom logos, unique borders, unusual mastheads, digitized photos--Publishing Partner is your solution. After all, it was specially designed for you--the home and/or office Atari ST user--by the pro's who realize that there's more to your computer than just typing letters.

- * Vert. and Horz. rules--Exact Alignment
- * Auto Text flow for columns/pages
- * Layout Multiple Columns of text
- * Change columns on finished page
- * Display entire page, 50%, or 25%
- * Easily Re-position Text and Graphics
- * Alternating Headers/Footers
- * Mix Type, Fonts, and Sizes *anywhere*
- * Adjust Sizes from 2pts to 144 pts (2")
- * Adjust line spacing (leading) by points
- * Import other program's graphics
- * Rotate Graphic Images
- * Multiple Patterns, Shades and Colors
- * Enlarge & Reduce Graphics/Exact fit
- * Cut, Paste & Crop Graphics
- * Tool box function/Unlimited patterns
- * Boxes, Circles, Arcs, Polygons, etc.
- * Insert lines directly on the page
- * Adjust Character Spacing
- * Use Hairlines to separate columns

AVAILABLE FOR ONLY \$149.⁹⁵



FORMS CREATOR

You can create a variety of forms quickly and easily with your Publishing Partner.

For example, you can create your own:

Letterhead

Invoices

Purchase Orders

Labels

Bumper Stickers

Business Cards

Certificates

General Ledger

Shipping and Receiving

Routing Slips

"While you were out" Phone messages

Templates

Price Estimate forms

Requisition forms

Shipping Logs and much more!

Publishing Partner supports most dot matrix printers, including the Epson tm Star tm and Okidata tm Printers. Also

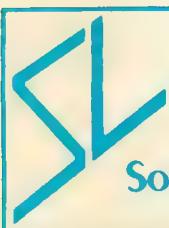
supported are any Postscript output devices such as the Apple Laserwriter tm

New print drivers are constantly being released, so please call to make sure your printer is supported.

FOR MORE INFORMATION OR TO PLACE

AN ORDER, CALL (314)894-8608.

DEALER INQUIRIES INVITED.



Soft Logik Corp.™

4129 OLD BAUMGARTNER * ST. LOUIS, MO. 63129 * CALL (314) 894-8608

8-Bit Enhancements

Billboard, DISKIO and more . . .

Reviewed by CHARLES CHERRY

DISKIO

Get out your checkbook and order this program right now. Everyone needs a good disk editor and **DISKIO** stands head and shoulders above the rest. This is the program you will reach for when a file gets trashed, when you get the dreaded ERROR 164 (file number mismatch), when you drip peanut butter on your floppy, or when any of the myriad of disk horrors befalls you.

Do not confuse this product with **Antic's DISKIO** (January 1985) and **DISKIO Plus** (December 1985). Those type-in programs are DOS extensions that make DOS friendlier and more powerful. Robert Gray's **DISKIO** is a disk repair and editing utility. And it is the best one I have ever seen.

DISKIO does all the normal repair, editing and copying functions. It displays sectors in Hexadecimal, ATASCII or screen codes. It supports normal, extended and double density. It also supports RAMdisks (DOS 2.5, MYDOS, Omnimon, Axlion, XE, expanded XL/XE), hard disks, and 8" disks, including subdirectories. It automatically repairs ERROR 164s and rebuilds directories.

I could quibble over a couple of minor points, the disk map could be more informative, an automatic VTOC repair is missing, as is a sector copier. But, over all, **DISKIO** is

reasonably complete and very easy to use. Even the documentation is pretty good, although if you're a novice, you should read the last half of the instructions before the first half.

\$26, 48K disk. Robert Gray, 123 N. Summit, Little Rock, AR 72205. (501) 374-5400.

CIRCLE 201 ON READER SERVICE CARD

drill an exit hole for the cable. The cable comes with a plug so you can disconnect the keypad (although it still leaves the cable end hanging out).

If you already have a CX85, you can save \$10 by sending it in with your order. For those with more skill than money, IC promises that the keypad modification in kit form should be available by the time you read this.

The **ICX-85** is a winner. Even if you only use numbers to balance your checkbook, this keypad is well worth the money. By the way, if you have an Atari XL or XE computer, you should install IC's \$15 Function Key Kit at the same time. It will give you 1200XL-style function keys.

\$44.95 (\$34.95 with your CX85). Innovative Concepts, 31172 Shawn Drive, Warren, MI 48093. (313)293-0730.

CIRCLE 202 ON READER SERVICE CARD

ICX-85 KEYPAD

If you type a lot of numbers into your 8-bit Atari, this is for you. The **ICX-85** is a customized Atari CX85 numeric keypad. Arranged like a standard calculator keyboard, the discontinued CX85 boasts 17 keys—addition, subtraction, multiplication and division signs, numbers, decimal point, comma and [RETURN]. It even has a "home key" bump on the 5.

There have been several other third-party keypads like this, but they all require special software "handlers" that often clash with other programs. Innovative Concepts modified the CX85 keypad to be wired directly into your computer. The advantage is that the **ICX-85** runs without a handler and works with any software.

Installation requires soldering a dozen wires to the keyboard chips in your computer. It's not difficult, but some skill is required. You also must



BILLBOARD

Billboard prints LARGE pictures. It also prints small pictures, but as the name suggests, it really shines when you start measuring results in feet instead of inches. While it doesn't manipulate pictures like Picture Plus or MagniPrint II+, the print quality is just as good and **Billboard** is easier to use. It will quickly become your favorite picture printer.

Billboard prints Graphics 7+ (15), Graphics 8 and Graphics 9 pictures in

You own the best computer.

Now you need the best Atari magazine...Antic

a staggering array of sizes. Horizontal and vertical sizes are set independently so you can squash or stretch your pictures. Color pictures are printed using gray scale patterns. You decide which color gets which pattern.

There seems to be no limit on the size of a printout. You can pause the printing to change ribbons or add paper. Billboard tells you how many pages and how long each printout will take. A 200-foot by 300-foot billboard, for instance, uses 131,712 sheets of paper and takes 260 days to print. I did not test this.

Billboard is written in BASIC and machine language, which makes it easy to modify. Although it only supports Epson FX-compatible printers, I changed the codes (with help from the documentation) to work with my Gemini 10X. I also changed the screen display to show print density in dots per inch instead of dots per line.

Billboard is shareware, which means you can try a copy free. If you like it and use it, send programmer Chris Wareham the \$10 for the program—be honest with shareware so that this kind of worthwhile program can remain available to us all. Other shareware programs are available from CompuServe, GEnie, local BBS's and users groups.

\$10, 48K disk. Chris Wareham, 1215 West Jackson, Spearfish, SD 57783.

CIRCLE 203 ON READER SERVICE CARD



SMART SPEAKER

The **Smart Speaker** speech synthesizer translates text in your computer into words you can hear. It is a surprisingly large box (about 7 1/2 x 8 1/2 x 3 inches) that can hook up to any computer using either the

Centronics parallel (printer) or RS-232 serial (modem) port. I tested it on a 130XE with an 850 interface and on a 1040ST.

Having both parallel and serial connectors makes Smart Speaker unusually flexible. Any software that can send text to a printer or a modem should be able to make it talk. However, the printer control codes my word processor sent made Smart Speaker choke. Instead of sliding over them silently or pronouncing gibberish, it just stopped. I had to turn it off to reset it.

Speech synthesis is very difficult. Words must be built up out of elementary sounds called phonemes, which must be reproduced accurately and strung together smoothly. Some provision must be made for punctuation marks. Pitch, volume and speed must vary to provide expression. Even if you produce a great-sounding system, you still have to deal with the idiosyncrasies of the English language. You must teach it, for example, to recognize the differences in tough, cough, though and through.

Given the state of the art, no one would ever mistake a speech synthesizer for a real human voice. In fact, no one can honestly claim that their system is easy to understand. Nonetheless, there are differences, and some are better than others. Smart Speaker's speech quality does not rank particularly high. Both S.A.M. on the 8-bit, and "SPEAKTXT.TOS" on the ST are easier to understand—and they're just done with software.

Smart Speaker's problems begin with the phonemes. There is considerable background noise and the volume levels are uneven. The text to speech translation is not bad, but there is no phonetic language to improve it. You can intentionally misspell words (i.e., "nniife" for "knife"), but it requires a lot of experimentation.

All synthesizers become more understandable as you use them. Your brain learns the "accent" and makes the corrections for the system. I suppose that the Smart Speaker would become passable with frequent use.

The Smart Speaker hardware is well done. The system is convenient and easy to use. Let's hope that future revisions improve the intelligibility of the translation.

\$229.95. Swisscomp Inc., 5312 56th Commerce Park Blvd., Tampa, FL 33610. (813) 628-0906

CIRCLE 204 ON READER SERVICE CARD

FONT CRAFT

Font Craft is yet another 8-bit character set editor. However, it's better than most. It permits six different fonts in memory (counting the normal one) and displays two of them at once. It can edit as many as six characters simultaneously and it has a scratch-pad screen for trying your fonts in various modes or experimenting with animation—which is limited to switching the five character sets.

The single-character display works well, but the multi-character display flickers annoyingly. It is two characters high by three wide, and it doesn't show a character completely surrounded as a 3x3 display would. Nevertheless, it is useful and the editing tools (such as Rotate and Flip) work on groups as well as individual characters.

Font Craft is generally easy to use. It can be operated either entirely with the joystick or with a combination of joystick and keyboard. It can store fonts as DATA statements for BASIC programs, or as data blocks for other languages. The documentation is adequate, but it's buried in awkward multi-screen HELP files. It would be better if you could print out all these screens.

Font Craft is a little rough around the edges. There are misspellings in the documentation—and even on the menus. The displays are not completely thought out, and the interface is uneven. But Font Craft is undeniably powerful. It's a worthwhile addition to the library of Atari character set utilities. \$8, 48K disk.

Pinekraft Enterprises, P.O. Box 56002, Harwood Heights, IL 60656.

CIRCLE 205 ON READER SERVICE CARD

GIVE ANTIC...AND SAVE 58%!

GREAT GIFT IDEA!



The easy way to please your favorite Atari user and yourself.

ANTIC is both fun and practical. A wonderful gift to find in the mailbox every month. And every gift subscription saves you money—up to 58% off the regular price.

Now is the time to treat someone (and yourself?) to the ANTIC Action Edition with disk. What a pleasure for someone special. And just see how much you save!

You save time and energy too. Just send us your Gift List, and we'll take care of the rest. What could be easier?

For fast service on subscription orders: **800-234-7001 (6 am–6 pm PST, Monday–Friday).**

We will mail you an attractive Gift card to announce each Gift subscription if we receive your order by the end of November. After December 1, we will send each Gift Announcement card, handsigned, direct to the recipient.

Antic
THE ATARI SOURCE

MegAnimator

Atari moviemaking was never easier

● by JACOB DONIAM

Two of the Atari's most impressive features are character set redefining and page-flipping. MegAnimator combines both of these tools into a powerful, easy-to-use animation system.

MegAnimator has five parts—Block Editor, Frame Editor, Movie Editor, Movie Player and the MegAnimator Main Menu. I wrote it this way so that I could use every bit of memory available. Because any movie requires many frames to simulate motion, moving computer graphics gobble up available RAM at an alarming rate. If you RUN the Movie Player, then press [BREAK] and type PRINT FRE(0), you will probably see that less than 100 bytes of memory remain in an 800XL. The rest is taken up by the movie.

GETTING STARTED

To take your best shot at becoming the next Walt Disney, type in Listing 1, MOVPL.BAS; Listing 2, BLKED.BAS; Listing 3, FRMED.BAS; Listing 4, MOVED.BAS and Listing 5, MEGMATOR.BAS. Check them all with TYPO II and SAVE a separate copy of each. The movie files created by these programs are around 132 sectors each, so it's handy to leave that much room available on your MegAnimator program disks.

To create a movie with MegAnimator, RUN MEGMATOR.BAS. This menu program will let you access all of the other programs. First, use the Block Editor to create one or more sets of blocks. Next, use the Frame Editor to draw as many as 104 frames of animation with the basic building blocks you just created with the Block Editor. Third, put them all together and create the actual movie with the Movie Editor. The Movie Editor requests filenames of your block sets and frames, then combines that information into a master control file. Finally, the Movie Player loads and displays your completed

continued on next page

MegAnimator is a versatile and easy-handling picture animation system that moves as many as 64 image frames in a single presentation. This BASIC program works on 8-bit Atari computers with at least 48K memory and disk.



masterpiece.

DISK OWNERS: A MegAnimator demonstration movie is on your February disk. (Type-in BASIC listings of a full-scale MegAnimator cartoon would be far too long to print in the magazine.) To view the movie, select the Movie Player from the Main Menu and at the prompt, type ANTIC.

BLOCK EDITOR

The Block Editor is used to Edit, Load, or Save a set-up of Blocks. Selecting the Edit Block option brings up another menu with a box next to it. The cursor square in the upper left-hand corner of the screen can be moved with the joystick to choose one of 64 blocks you can edit. (You can't see the blocks because you haven't put anything in them yet.)

Press the joystick button over a chosen block and it will appear in the box, enlarged and with a small plus in the upper left-hand corner. Move the plus around with the joystick and add or remove a dot by pressing the button.

Now you can press any of the numbers displayed, and that option will be executed. They're rather self-explanatory—Scroll Up means moving upward. The only obscure choice, Reverse Block, turns all *on* pixels off, and all *off* pixels on. The [RETURN] key brings you back to the Main Menu.

When loading and saving block sets, you don't need to type the drive number or an extender when prompted for a filename. The program automatically puts these in for you, saving the set with an extender of .SET.

FRAME EDITOR

Option 4 of the Frame Editor menu, Load Block Set, shows what your frames will look like. The Edit Frames option takes you to another new menu with six choices. You will see the cursor square in the upper left-hand corner. If you load a block set you created, it will show up here.

Move the square to select the block you want to draw with. Press the joystick button to go to the drawing screen. The current frame is displayed next to the menu. You can change to another frame by selecting Option 1. There are 64 frames, numbered 0 to 63.

Other selections let you choose which of four colors to draw with, or copy from another frame to the current frame so you can repeat similar parts of a picture. The Parameters function lets you change the frame settings—which include four sound voices, eight available block sets and a delay for that frame.

MOVIE EDITOR

Now all that keeps you from becoming the next Walt Disney is learning to animate your creations. Luckily, this is the easiest part. The Movie Editor asks you for all the necessary information and creates a movie file, ready for displaying with the Movie Player.

Keep in mind that while you can have a total of 104 frames, you can only edit 64 with the Frame Editor. If you

specify more than 64 frames, the Movie Editor asks you for a second filename for the remaining frames. As stated above, you may have as many as eight block sets. If you ask for a block set in Parameters that you haven't loaded with the Movie Editor, you will be shown the place in the sequence memory where it should be. Usually this is blank, but sometimes it contains garbage. If you want a blank block set, just save an empty one.

MOVIE PLAYER

Finally, select Movie Player and type in the filename for your movie file. The file title you specified will be displayed as the various frames and block sets are loaded, and your movie will run.

PROGRAM NOTES

Two machine-language routines are used—a display list interrupt routine, and a block memory SAVER/LOADER that calls CIO. Because they both reside in the first bytes of Page 6, there is a lot of awkward switching in the SAVE/LOAD routines to ensure that the proper code is there when the DLI is needed.

Everyone seems to have a pet method for clearing out memory, such as resetting the string pointer and clearing the string, or using a machine language routine. I simply tell the computer to write to the area I wanted cleared (via locations 88 and 89) and PRINT a CHR\$(125). This puts the computer's built-in routines to good use.

Lines 1650-1658 are a subroutine that, given IN and BT, converts IN to a binary representation, inverts the bit specified by BT, converts it back to decimal and places the result in OT. I first tried BASIC's slow exponent operator, then I created my own routine to find, for example, 2^x . Finally I created an array called PW, which contains powers of two and is many times faster than the exponentiation function.

FILE FORMATS

The Block Editor saves a block set directly from memory as a five-sector, 512-byte file. Although these files probably couldn't be loaded by other character editors because they don't contain the second half of the set, the Block Editor has no trouble loading files created by other editors. Just remember to use only the first 64 characters.

The Frame Editor saves all 64 pages (one frame per page) from 96 to 160 at the top of memory. In each page, bytes 0-239 are the screen, 240-243 are sound voices 0-3, 248 is the block set, and 249 is the delay in jiffies (1/60 of a second). The unused bytes from 244-247 were supposed to contain color register values, but I ran out of XL memory in Movie Player, so I couldn't implement it.

The Movie Editor creates a very simple file consisting of all the information you provide, in ATASCII format. ■

Jacob Donham is from San Rafael, California. He wrote MegAnimator during a two-week period when he should have been studying for high school finals.

Listing on page 66

These two short subroutines can increase the speed of most Atari BASIC programs by 10% to 80%. Designed for intermediate BASIC programmers, Fast-Stack and Fast-Jump speed up access for GOSUBs and FOR/NEXT loops. The BASIC programs work on 8-bit Atari XL/XE computers with at least 48K memory. They can use disk or cassette, but do not run with cartridge BASIC.

Fast-Stack and Fast-Jump

40 % faster BASIC for you

Atari 8-bit BASIC is dependable, versatile and friendly—but it's not fast.

Consider this example of how Atari BASIC trades speed for safety: You press [BREAK] to stop a program, change a few lines and then resume the edited program with a CONT or GOTO statement. With most other programming languages, this could lead to disaster because of the way those languages use their runtime stack.

Immediately before execution of a GOSUB (subroutine call), the runtime stack stores information needed to return from that subroutine. When Atari BASIC encounters a RETURN statement, it can tell which line to return to by pulling the line number of the previous GOSUB statement from the top of the runtime stack. The same process is used to find the line number of the FOR referenced by a NEXT statement.

But after Atari BASIC knows the line number, it still must search through the *entire* BASIC program, starting from the first line, until it finds the selected line. Unlike most other languages, Atari BASIC doesn't just jump to an address removed from the stack. Rather, it locates the proper return address safely—but slowly.

However, Fast-Stack gives you a way to trade some safety for speed. This one-line machine language program is activated by a USR call. Fast-Stack copies BASIC ROM to BASIC RAM, then modifies BASIC so that the runtime stack uses the return line *memory address*, instead of the return line *number*.

Fast-Stack should increase your BASIC program speed

by BILL BODENSTEIN

10% to as much as 40%, depending on the program size and how far down in the program you placed the most frequently used GOSUBs and FOR/NEXT loops.

SOME CAUTIONS

To prevent jumping to the wrong address after editing lines, the modified BASIC in RAM will only be active while the program is RUNning. ROM-based BASIC is turned on again at the READY prompt.

However, because stopping the program will not clear the runtime stack, re-entering the program from the subroutine level could cause Error 15—GOSUB or FOR line deleted. That's because BASIC ROM treats the *address* of the line taken from the stack as the line number itself. Therefore, use Fast-Stack only with your finished BASIC programs. If you need to edit a program containing Fast-Stack, return to the edited program with a RUN command instead of GOTO or CONT.

You may need to change the number of iterations in any DELAY loop your BASIC programs. Better yet, use the internal real-time clock (memory locations 18-20) so that delays will always be the same with either XL or XE systems.

The Fast-Stack version of BASIC RAM will remain active in a BASIC program loaded and RUN from a RUN "D:filename" or RUN "C:" statement embedded in *another* BASIC program. If you want the second program to RUN at normal speed, add POKE 54017,253 to its first line to turn on ROM-based BASIC. POKE 54017,255 turns on your modified BASIC again. Be sure to type a CLR statement before using either of these POKEs.

II: FAST-JUMP

Fast-Jump also modifies Atari BASIC in RAM, but this routine speeds up the routine that searches for a matching line number.

Let's say that in a 500-line program, line 400 contains the statement GOTO 402. Upon encountering this GOTO, unmodified BASIC will automatically start at your program's first line and search—for a fairly long time—until it finds line 402.

Fast-Jump's line-searcher routine does things in a speedier way. It compares the current line with the line being referenced. If the referenced line follows or *is* the current line, BASIC begins searching from the current line, not at the start of the program. In our previous example, BASIC, modified by Fast-Jump, will begin searching at line 400—and discover line 402 very quickly.

HOW IT WORKS

Whenever unmodified BASIC encounters a GOTO or GOSUB, it converts the number, variable, or expression that follows the statement into a two-byte integer. BASIC then starts at the first line of the program and compares this two-byte number with the two-byte line number that precedes each tokenized BASIC line. When a match is found, the address of that line is returned in STMCUR, the current BASIC statement pointer (locations 138 and

139), and execution begins from this new line. If no match is found, an ERROR 12 (Line Not Found) is generated.

In a 10-to-30-line program, execution time can be reduced 10% with each GOTO, GOSUB or READ if the line being referenced (or containing DATA) immediately follows or *is* the line containing that statement. In programs over 500 lines, some line-referencing statements RUN more than 80% faster.

To achieve the greatest speed improvements, try putting the subroutines immediately below the lines that call them. With Fast-Jump, you needn't cram them all at the start of your program for faster execution. Instead, in those first lines, place only the subroutines called throughout the program.

FINER POINTS

It's good Fast-Jump practice not to backwards-reference your subroutines. Instead of these lines:

```
1000 IF Z*X>10 THEN 2000  
1010 X=X+1:IF X<10 THEN 1000
```

try this one:

```
1000 ON Z*X>10 GOTO 2000:X=X+1:IF X<10 THEN  
1000
```

If $(Z * X)$ is *not* greater than 10, execution is transferred to the next *statement*—not the next *line*, as with IF-THEN conditions. (A FOR/NEXT loop may also work, using the speed benefits of Fast-Stack.)

One problem with Fast-Jump is that it occupies the area of Atari BASIC code that handles the NEW command, so NEW does nothing. To erase the BASIC program, change any NEW statement in your program to POKE 202,1:END. In direct mode NEW works fine, because Fast-Stack re-enables BASIC ROM when exiting the program.

TYPING THEM IN

Type in Listing 1, FASTPROG.BAS, check it with TYPO II and SAVE it to disk or cassette. When RUN, FASTPROG.BAS creates a file called FASTPROG.LST which contains *both* the Fast-Jump and Fast-Stack routines.

Listing 2 and Listing 3 are the MAC/65 source code for Fast-Stack and Fast-Jump, respectively. You do not need to type them in order to use the program. Antic Disk Owners will find all three listings on the monthly disk.

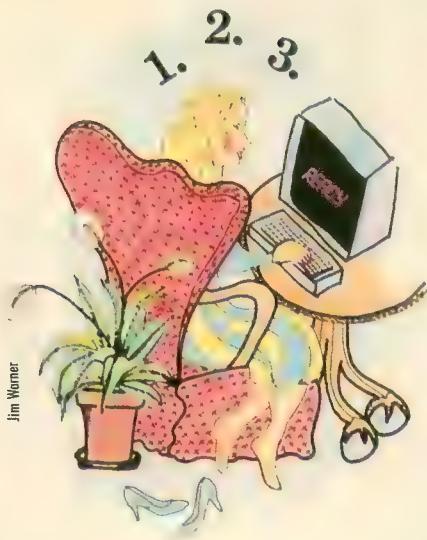
To merge these two routines with your BASIC program, simply ENTER the FASTPROG.LST file from disk or cassette. NOTE: the routines occupy lines 0 and 1, so be sure your own BASIC program leaves these lines free.

Though Fast-Stack and Fast-Jump work independently, you'll need both USR calls, because the machine language routine in line 0 is also responsible for copying BASIC into memory.

Bill Bodenstein is a computer science senior at the University of Cincinnati. Readers rated his Multi-Autorun the most popular program in our March, 1987 issue.

Listing on page 71

First-Time *Atari Users* *Handbook*



Jim Warner

What to do after you unpack the box

By

Gregg Pearlman,

You just bought your first personal computer. You didn't want to spend a lot of money, and your eyes lit up when you saw the Atari 130XE in the store doing the same things as the brands that cost so much more.

Your start-up 130XE computer system requires a disk drive—an Atari 1050 is a reliable and widely available choice. A video monitor would be nice, but for now your backup television set will suffice. And you decided to put off buying additional peripherals—such as a printer or a modem—until after you learn the fundamentals of operating your new computer.

■ ■ ■

Antic

Assistant

Editor

UNPACKING

Here's what you'll see when you open your two Atari packages:

1. Atari 130XE computer: It looks like a typewriter keyboard, but all the microchip brains are inside. *continued on next page*

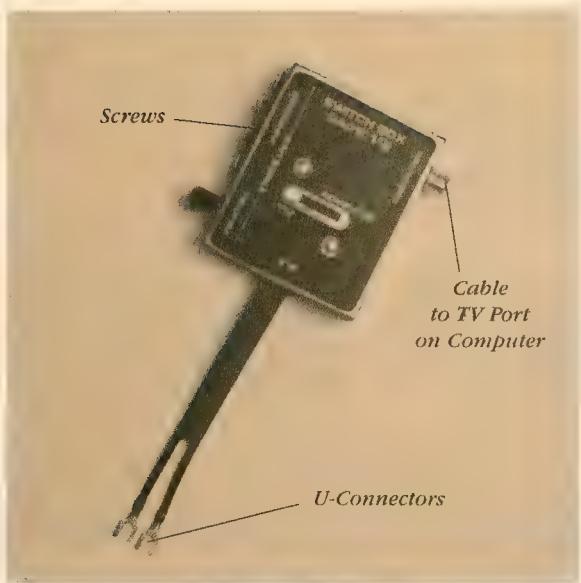


Figure 1

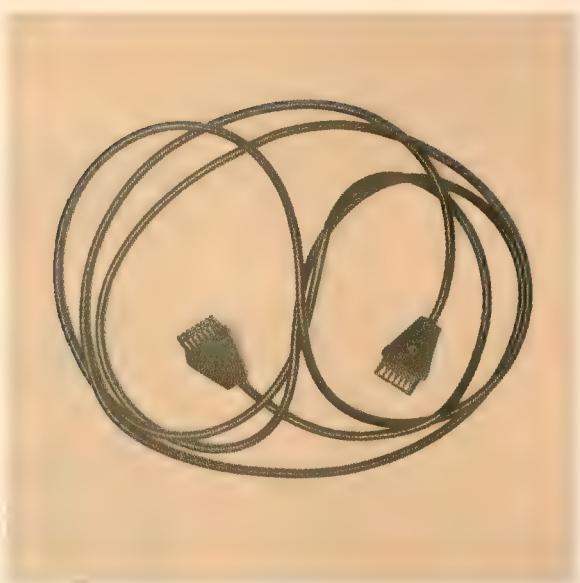


Figure 2

2. Computer power supply: A small, heavy box with two electrical cords attached to it.

3. Television switchbox and cable: Connects your television set to the computer.

4. Atari 1050 disk drive.

5. DOS 2.5 disk: DOS is the abbreviation for disk operating system.

(If you buy another brand of disk drive such as Astra, you'll want to get a copy of DOS 2.5 or 2.0 from an Atari users group, or from the monthly Antic Disk, or from Atari customer service. You also want to obtain DOS 2.5 or 2.0 if your system came with the incompatible DOS 3.)

6. Disk drive power supply: A bit smaller than the computer power supply, but otherwise not much different

8. Serial cable: Thick cable with ends that look alike. Connects the disk drive to the computer.

9. Various booklets and manuals that you may have trouble understanding at first.

At home, you'll need the following:

1. Electrical outlets (or extensions) for the television and two power supplies.

2. Blank floppy disks: They're inexpensive and normally sold in packages of 10.

Other useful options:

1. Video monitor: If you use a high-resolution monitor instead of a standard television set, you'll need to connect it to the computer via a monitor cable from an electronics store.

2. Power strip: Usually these have six electrical outlets, a surge protector, and an on/off switch.

3. Joystick: Not just for games—some word processors

and other productivity programs allow convenient joystick operation too.

4. Disk box: You can start with a shoebox, but it's nice to have a box that is actually built for storing disks safely.

5. Disk labels: This is really more of a necessity, imagine if all your music cassettes had no labels. However, blank labels are usually provided when you buy new disks.

HOOKING UP

1. Carefully remove all your equipment from the boxes and put it on a table or desk. Make sure nothing from the above list is missing.

2. Make sure your computer is off. The on/off switch is in back, at the left end. Plug the computer power supply cord's jack into the POWER port on the back of the computer. Plug the other cord into an electrical outlet.

3. Hook the TV switchbox U-connectors to the VHF antenna screws on your TV. Hook the incoming antenna's U-connectors to the screws on the *switchbox*. (See Figure 1.) If your TV does not have these screws, you can buy adaptors at Radio Shack or other electronics stores.

4. Plug one end of the switchbox cable into the port in the TV box and plug the other end into the TELEVISION port on the back of the computer—right next to the CHANNEL switch. Make sure the TV is plugged into a power outlet. (NOTE: You only need the TV switchbox if you are using a television set. Video monitors, as explained previously, require different cables that connect to the MONITOR port on the back of the computer.)

5. Push the computer's CHANNEL switch to either 2 or 3—which ever TV channel does *not* transmit in your area. You'll tune your TV to the same channel.

6. Carefully remove any protective cardboard or disks from the slot in front of the disk drive. Plug one disk drive



Figure 3

Photography by Mary Rhomberg Palogin

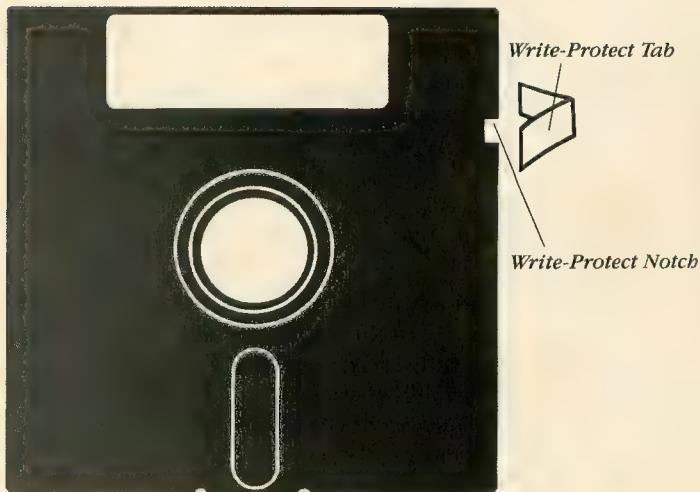


Figure 4

power supply cord into the POWER port on the back of the disk drive. Plug the other cord into an electrical outlet.

7. Plug one end of the black serial cable (*Figure 2*) into one of the two I/O CONNECTORS ports on the back of the disk drive. Plug the other end into the PERIPHERAL port on the back of the computer.

8. On the back of the 1050 disk drive, push both DRIVE SELECT switches to the left. This tells the computer that this particular disk drive is "drive 1." (If your drive is not an Atari 1050, check the manual for correct settings.) Later on, you may wish to "piggyback" additional disk drives by connecting them to each other via additional Atari-compatible serial cables.

TURNING IT ON

1. Make sure your computer is turned off. The on/off switch is in back, next to the POWER port. Turn on your TV. Move the TV/COMPUTER switch on the switchbox to COMPUTER. Tune the TV to whichever channel the computer's channel switch is on—either channel 2 or 3.

2. Turn on the disk drive switch. The lower of the two red lights is the power light, which should now go on. You'll hear some clicking and whirring while the other red light, the busy light, goes on. Wait until the busy light goes off.

3. Take the DOS 2.5 Master Disk out of its protective sleeve. Holding the top of the disk, put it into the drive, label side up. Push it in until it clicks. (Never touch the magnetic disk material itself, only the paper packaging.) Flip down the door (retainer arm). (See *Figure 3*.)

4. Finally, turn on the computer. This is always the last step in the process. (That on/off switch is in back, on the left.) On a color TV set, the screen will turn blue. The disk drive noises and busy light will go into action again. If you have the volume turned up, you'll hear rapid beep-

ing. This is the sound of DOS 2.5 being loaded into the computer.

5. When the word READY appears on the screen, you know you've done everything right up to this point.

However, if you made a mistake in booting up (starting) your computer system, you will see your first BOOT ERROR message flashing on the screen. Re-read the previous instructions and try again.

Always remove your disk before turning the drive on or off. If you see the SELF-TEST screen, double-check the cables leading to the disk drive.

DISK OPERATION

For your first disk operation, you'll duplicate your DOS disk onto a blank disk.

1. From the READY prompt, type DOS—and then press the [RETURN] key. In fact, you might as well get used to pressing the [RETURN] key after every DOS and BASIC command, even if it is not specified in the instructions.

The disk drive whirrs and turns on the busy light again, bringing up the DOS 2.5 menu.

DISK OPERATING SYSTEM II VERSION 2.5 COPYRIGHT 1984 ATARI CORP.

- | | |
|--------------------|-------------------|
| A. DISK DIRECTORY | I. FORMAT DISK |
| B. RUN CARTRIDGE | J. DUPLICATE DISK |
| C. COPY FILE | K. BINARY SAVE |
| D. DELETE FILE(S) | L. BINARY LOAD |
| E. RENAME FILE | M. RUN AT ADDRESS |
| F. LOCK FILE | N. CREATE MEM.SAV |
| G. UNLOCK FILE | O. DUPLICATE FILE |
| H. WRITE DOS FILES | P. FORMAT SINGLE |

SELECT ITEM OR RETURN FOR MENU

2. Press [J] on the DOS 2.5 menu—and don't forget to press [RETURN] afterward.

continued on next page

3. When the menu says DUP DISK—SOURCE, DEST DRIVES, type 1,1 and press [RETURN].

4. At the prompt INSERT SOURCE DISK, TYPE RETURN, insert the DOS 2.5 Master disk you want to copy. Press [RETURN]. Your *source* disk is always the original you are copying *from*—your *destination* disk is the one you are copying information *to*.

5. You'll hear the disk drive go into action again, reading the information on the disk. At the prompt INSERT DESTINATION DISK, TYPE RETURN, remove the source disk, put the destination disk into the drive, and press [RETURN]. You'll hear 40 loud clicks, then 40 quiet clicks—your destination disk is being "formatted" (set up to be used by the computer). Then you'll hear the computer writing information to the disk. At any onscreen prompts, insert whichever disk you're told to insert. When the program is done copying, you'll have an exact duplicate of your DOS 2.5 Master Disk.

6. Put your DOS 2.5 Master Disk back into its protective sleeve and put it in a safe place. Use the copy as your main DOS disk. If your copy ever gets damaged, just use your master disk to make a fresh copy.

FILE PROTECTION

To see a directory of the files on a disk, choose option [A], Disk Directory, and press [RETURN] twice. When you're done reading the directory, press [RETURN] to go back to the DOS menu.

Sometimes, after copying a disk this way, you'll want to make sure the information can't be changed or erased. There are several ways to do this:

From the DOS menu you can choose option [F], Lock File, for each file you want protected. You can tell that a file is locked, if the filename in the directory is preceded by an asterisk (*). To unlock a file, choose DOS option [G].

Lock File prevents anyone from changing or erasing that file. But if you accidentally format the whole disk, you're out of luck. To prevent formatting or deleting of *any* kind, you can put a "write-protect tab" on the disk notch. (See *Figure 4*.) Write-protect tabs look like small, narrow pieces of colored tape, and they're usually included with new disks.

DISK FORMATTING

If you put an unformatted disk into your drive, the drive will make strange noises and the screen will display an error number. Think of your disk as an electronic blank wall. You can't keep electronic books on that wall without electronic shelves.

The computer looks for information arranged neatly on the electronic shelves. Atari 8-bit computers use "soft-sector" disks, which must be formatted into 40 circular "tracks" of 18 sectors each. Formatting doesn't only set up a disk for use, it completely *erases* all previous information stored on the disk. In effect, formatting creates a fresh disk.

So, with the DOS 2.5 menu on the screen, put a blank

disk into your drive and choose option [I], Format Disk, or option [P], Format Single. Option I formats the disk in Atari's "Enhanced Density" which holds 50% more information than option [P], the normal "Single Density" format. A disadvantage of option [I] is that some programs can't use disks formatted in Enhanced Density (sometimes also called Dual Density).

SIMPLE BASIC

XL and XE computers have Atari's version of the BASIC programming language built in. (For example, the 130XE has Atari BASIC, Revision C.) Each line of a BASIC program requires a line number between 0 and 32767. The computer will do *exactly* what you tell it. For instance, type:

```
10 PRINT "HELLO"
```

Press [RETURN]. Type RUN to start the program. The computer will indeed print HELLO on the screen. However, if you type:

```
10 PRIMT "HELLO"
```

and press [RETURN], you'll see an error number on the screen. As they say, garbage in, garbage out.

Believe it or not, 10 PRINT "HELLO" is a program. Here's another program for you to type:

```
10 PRINT "TYPE A NUMBER"
20 INPUT A
30 PRINT "TYPE ANOTHER ONE"
40 INPUT B
50 PRINT "YOU TYPED"
60 PRINT A
70 PRINT "AND"
80 PRINT B
90 END
```

Type RUN and the program will begin operating. At the question mark (?) prompt, type any number and press [RETURN]. Almost immediately the program will print that number to the screen.

If you want to see what your program looks like, first make sure the program isn't actually running. (If it is running, press the [BREAK] key.) Type LIST and the program lines will be LISTed on the screen.

If you want to keep that program and use it later, you must SAVE it on a disk. First, think of a file name of no more than eight characters, like FILENAME. File names must be alphanumeric—no special characters (#, %, etc., or punctuation marks like commas or spaces) are allowed. Also, filenames may not use lowercase letters, or begin with numbers. You can also include a three-character "extender." So you could call this file FILENAME.123, or FIRST.BAS, or even HENRY.

Type SAVE "D:FILENAME.123" (be sure to include those quotation marks at each end) and press [RETURN]. The disk drive will start and soon your program is SAVED on the disk. The "D:" stands for disk drive. If you have more than one drive, you'd use "D1:", "D2:", etc.

Just for fun, press [SHIFT] [CLEAR], which clears your screen. Now type NEW and press [RETURN]. The NEW command erases FILENAME.123 from the computer's memory, but not from the disk where you SAVED it. To get your program back, type LOAD "D:FILENAME.123" and press [RETURN]. When READY reappears on the screen, you know your program has been loaded. To check it, just type LIST.

What if you want to RUN Diamond Dave, some issue's Game of the Month? First, type DOS. The disk drive will start spinning again, and the DOS 2.5 menu will appear. Remove the DOS disk, put the Antic Monthly Disk into the drive and choose option [A], Disk Directory, then press [RETURN]. At the prompt DIRECTORY—SEARCH SPEC,LIST FILE, just press [RETURN] twice. The resulting disk directory shows a file called DIMNDAVE.BAS.

Choose option [B], Run Cartridge, which returns you to BASIC. (BASIC is built into the 130XE, but not into the earlier Atari 800 or 1200XL—users of either computer needed to install a BASIC cartridge. Thus RUN CARTRIDGE returns you to BASIC on the 130XE despite the absence of an actual cartridge.)

When you see the familiar READY, type LOAD "D:DIMNDAVE.BAS" and you'll get another READY. Now type RUN—you're playing the game of the month. In fact, you can even LOAD and RUN the game in one fell swoop by typing RUN "D:DIMNDAVE.BAS".

If you're not interested in games, there's plenty of serious software on the market: word processors, spreadsheets, databases, graphic art, music. (Software and programs mean the same thing.) However, most commercial software is not written in BASIC, because other programming languages are faster and require less memory.

If you have a piece of commercial software—say, a word processor—turn off your computer, remove any disk from your disk drive and insert the word processor disk. Now, *bold down the [OPTION] key* and turn on your computer. The program will proceed to load and run automatically. Holding down [OPTION] turns off BASIC and lets the computer run programs written in another programming language.

OTHER DOS FUNCTIONS

With option [C], you can copy a file to another disk (if you have another drive), to another filename on the same disk, to the printer, the screen or the editor—which is almost the same as copying to the screen.

Option [D] lets you delete any, all or selected files (except locked files) from a disk.

Option [E], renaming files, is especially important when you have several versions of a file. Let's say that on July 4 you wrote up a short program, CHRCOUNT, to count the characters in a file. On July 10 you make some minor changes and instead of just writing the file back to CHRCOUNT, you call it CHRCOUNT.710 (the extender is that current date). If you want to add a date on the original CHRCOUNT, choose option [E] from the DOS menu. At the prompt RENAME—GIVE OLD NAME, NEW, type

D:CHRCOUNT, CHRCOUNT.704—and press [RETURN].

Options [K], [L] and [M] are for machine language files, so you can learn about them later on.

If you use option [N], create MEM.SAV, you can go to DOS from BASIC, perform whatever DOS functions you need and return to BASIC. Your BASIC program will still be in memory. If you don't have a MEM.SAVE file, your program is erased from memory every time you use DOS.

Duplicate file, option [O], is like option [C], except that [O] lets you switch disks in a single disk drive. At the prompt NAME OF FILE TO MOVE?, type the name of the file to be copied. Then insert source or destination disks as instructed by the onscreen prompts. ■

RECOMMENDED READING

The following sources will be very helpful as you learn how to use your Atari:

Your Atari Computer by Lon Poole. Osborne/McGraw-Hill, 2600 Tenth Street, Berkeley, CA 94710. (415) 548-2805. \$17.95, 474 pages.

Mapping the Atari by Ian Chadwick. Compute! Publications, Inc. (ABC), 825 Seventh Avenue, New York, NY 10019. (212) 887-5928. \$16.95, 272 pages.

Atari BASIC (XL edition) by Albrecht, Finkel and Brown. John Wiley and Sons, 1530 South Redwood Road, Salt Lake City, UT 84104. (801) 972-5828. \$16.95, 388 pages.

ProCopy ST BACKUP UTILITY

You can't backup your software because copy protection locks you out. ProCopy is the key!

- Protects against the accidental loss of expensive software
- Works with all Atari STs
- Copies both S/S & D/S disks
- Use with 1 or 2 disk drives
- Not copy protected
- **FREE** shipping and handling
- **TOLL-FREE** telephone number
- Updates are only \$12 with return
- Orders shipped same day
- Disk analyze function included

Dealer
Inquiries
Welcome

VISA MasterCard and C.O.D.
orders

\$ 34.95

Call (800) 843-1223

Send check for \$34.95 (overseas add \$2.00 for air mail) to:

PROCO PRODUCTS

P.O. BOX 665, CHEPACHET, RHODE ISLAND 02814 USA
(401) 568-8459

Available Internationally in Europe and Australasia	THE MOVING FINGER CO. Building 2 Shamrock Quay Southampton, SO1-1QL England Tel. 0703-227274	TECH-SOFT COMPUTER WHOLESALE 324 Stirling Highway Claremont Western Australia 6010 Tel. 09-385-1885
---	---	---

CIRCLE 036 ON READER SERVICE CARD



WELCOME TO COMPUERVE. THE LARGEST COMPUTER INFORMATION SERVICE IN THE UNIVERSE. (AS FAR AS WE KNOW.)

More people use CompuServe than any other online computer information service on Earth.

Over 380,000 members access hundreds of information, communications and entertainment services online.

Thousands with similar interests and special expertise converge regularly and exchange ideas on an ever-expanding list of special-interest Forums.

They have access to a combination of more financial information, a greater variety of shopping services, and deeper research resources than any other online computer service. Anywhere.

Of course, it's conceivable that there's a service like ours somewhere that could give you more for your money. But you may have to travel a few light-years to find it.

Instead, all you have to do is visit your nearest computer dealer today. To order CompuServe direct, or for more information, write: CompuServe, 5000 Arlington Centre Blvd., Columbus, Ohio 43220. Or call 800 848-8199. In Ohio and Canada, call 614 457-0802.

CompuServe®

AN H&R BLOCK COMPANY

ST Resource

All the latest news for the ST user

February 1988



Pat Johnson

ST Picture Scanning Arrives

Reviewing Navarone's ST Scan

by Charles Jackson, Antic Technical Editor

Navarone's **ST Scan** Image Scanner (\$1,239) package vastly expands the versatility of your Atari ST's graphics and animation capabilities, bringing real-world images onto your computer screen. It's the perfect add-on tool for desktop publishers and laser printer users.

The scanner will digitize a full page of almost any type of artwork hardcopies in less than 20 seconds. It produces remarkably sharp and crisp black-and-white screen images at resolutions ranging from 75 to as high as 300 dots per inch (dpi) and in 32 gray shades. The system works with either monochrome or color monitors. Final images may be saved as DEGAS pictures, in GEM ".IMG" format, or as PostScript files.

ST Scan's hardware consists of a Canon IX-12 Image Scanner with Navarone's customized high-speed ST cartridge interface and a heavy four-foot cable connecting *continued on next page*



FIGURE 1 Halftone Mode



FIGURE 2 Line Art Mode



FIGURE 3 Combination

the two. The L-shaped interface is smaller than a paperback novel and plugs into the ST's cartridge slot.

The Canon IX-12 scanner is about half the size of a standard dot-matrix printer ($13\frac{1}{2} \times 11\frac{1}{2}$ inches), but requires an additional 11 inches behind it for convenient paper-feeding and to prevent overheating. It can accommodate pages as large as $8\frac{1}{4} \times 16\frac{1}{2}$ inches and has an adjustable feeder tray to keep your original artwork from twisting and sliding.

SCANNER SOFTWARE

The software for ST Scan is menu-driven for effortless operation and contains enough features to keep you pleasantly occupied exploring new possibilities with your scanner for days.

Scanning a photo is quick, easy and fun. Slide the original, face down, into the scanner's feeder tray and click on "Scan Full Page." The original will feed through the scanner. In a few seconds, a preliminary rough "pre-scan" of your original will appear onscreen.

You'll also notice a small "window" superimposed on the image. Use the mouse to drag the window across the image and place it over an area to be scanned. Next, click on "Scan Window" and feed the original back into the scanner. The scanner will digitize the area beneath the scanning window. In a few seconds, the final image will appear onscreen, ready to save to a disk file when the entire picture is finished.

If you've chosen to save your completed image as a DEGAS picture, the size of your scanning window is determined by the resolution of the picture—low-resolution pictures provide the largest windows, high-resolution pictures yield the smallest.

If you've chosen to save your image as an .IMG or PostScript file, the size of your window is limited by the memory size of your machine. A 1040ST running ST Scan has a 714K picture buffer. This is enough RAM to digitize an 8×10 inch photograph at 300 dots per inch.

As you learn to harness all of the scanner's power, a hard disk becomes more of a necessity than a luxury. A large image, such as the 8×10 photo described above, needs more disk space than even a double-sided disk offers. A hard disk system will let you store many such pictures. Moreover, the hard disk's access speed cuts the time needed for saving an image from several minutes to several seconds.

ST Scan's Options menu lets you set the scanner's resolution (75, 150, 200 or 300 dots per inch), adjust the contrast (light, normal or dark) and set the scanning mode to either halftone or line art.

Halftone mode (Figure 1) refers to the way newspapers reproduce black-and-white photos. Line art mode (Figure 2) is used when reproducing images which lack gray shades, such as sketches and diagrams.

APPLICATIONS

ST Scan adds new possibilities to your favorite ST graphics software. One reader used ST Scan to digitize the floor plans of her under-construction house.

The existing plans were a mirror-image reflection of the true design of the house. Rather than view the plans through a mirror, she loaded the scanned and digitized plans into DEGAS and used the Block and Distort functions to turn each floor plan into its own mirror image. After flipping the image on its back, she used the Text mode to re-label each floor plan.

Finally, she made simple scale drawings of her furniture, then used the Block function to place each piece into the floor plan. By saving the blank floor plans and the furniture outlines in separate files, she can quickly create and print many different furniture arrangements.

Turn your favorite drawing or photo into an iron-on transfer for your T-shirt. Digitize your favorite photos with ST Scan and use DEGAS to create a mirror-image of the photo as described above. Next, use a heat-transfer ribbon to print the image to a sheet of paper. Finally, iron the image onto a T-shirt. See *TShirt Construction Set* (**Antic**, February 1986) for full information about obtaining heat-transfer ribbons to use with your printer.

Your ST SCAN images may also be used with The Catalog's Cyber Paint software to create ultra-realistic animations.

Since ST SCAN only produces medium-resolution and high-resolution images, you must convert your scanned images into low-resolution DEGAS screens before using them with Cyber Paint. DEGAS Elite and **Antic's GrafCon** (July 1986) are two programs which will do this for you.

After conversion to low resolution, you can use your scanned image as a background screen for your animations. Or you could use Cyber Paint's Clip function to ani-

continued on page 46

Got-A-Minute Graphics

Six short ST stunners

By MARIAN LORENZ and ALLAN MOOSE

Got-A-Minute Graphics are six short, eye-popping, easy-to-type GFA BASIC color demonstrations—each one requiring less than 30 lines of code. These brief programs showcase many of the most powerful graphics capabilities of the ST. Because of their short, uncomplicated code and the fact that several of the programs have roots in mathematical formulas, they lend themselves to experimentation. For example, a simple value change in a color statement produces interesting variations.

Several suggested variations ask you to delete a line or two from the program. To avoid retying this line later, you can simply turn the line into a comment. Just precede the line with a single quotation mark ['] or the word Rem. BASIC ignores lines with these marks and your program will run as if the lines weren't there. To make BASIC recognize the line again, remove the quote mark or the word Rem.

THE PROGRAMS

The six Got-A-Minute graphics programs were designed to run on the ST color monitor in low resolution to make use of the 16 available colors, but many *can* run in medium resolution with four colors. Some will even run on the monochrome monitor, but they don't look very good.

Listing 1, FIREWORK.BAS, brings Fourth of July fireworks to mind. The sine and cosine functions create an underlying spiral pattern. Here are some suggestions:

1. Change the value of R to one of these:

```
R = Sqr(Point)
R = 20 * Sin(2 * Point)
R = 20 * Cos(2 * Point)
R = Log(Point)
R = Log10(Point)
R = Atn(Point)
```



2. Increase or decrease the number of points plotted, such as:

For Point = 1 To 3000

3. Increase or decrease the step size, as in this line:

For Point = 1 To 3000 Step 0.5

4. Remove the lines:

X=(Point+C)/16 * Cos(Point+C+60)

Y=(Point+C)/16 * Sin(Point+C+60)

Plot X+Xcent,Y+Ycent

X=(Point+C)/16 * Cos(Point+C+60)

Y=(Point+C)/16 * Sin(Point+C+60)

5. Modify lines:

The fireworks program runs as is, in medium resolution.

Listing 2, DIAMOND.BAS, is so simple that you'll be surprised at the designs it can create. This program forms a colorful diamond shape. After you type it in and run it, we suggest first experimenting with a single colored diamond because of the pattern generated by the GFA BASIC Draw To routine.

Try eliminating the Fill 0,0 statement and the C=Row/10 statement, and change Color C to Color 1, which draws a black diamond. Now experiment with the step size—try non-integer step sizes. Then re-enter the Fill command and C=Row/10. Try changing the value of the divisor in this line or try one of these lines:

C=Sqr(Row)

C=Tan(Row)

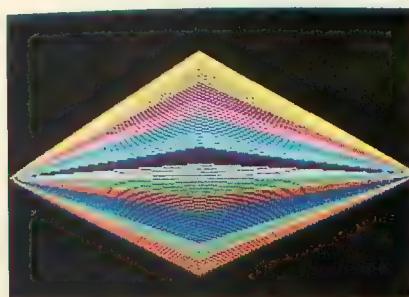
C=Log(Row)

C=Log10(Row)

C=10 * Cos(Row)

C=10 * Sin(Row)

continued on next page



```
C=20 * Sin(2 * Row)
C=20 * Cos(2 * Row)
```

To run the diamond program in medium resolution:

1. Before the Fill 0,0 statement, add the line C=1.
2. Replace C=Row/10 with the following lines:

```
C=C+1
If C = 4 Then
  C=1
Endif
```

MOIRE

When you look through a window screen that's in front of another window screen, you'll see something called a *moire* (pronounced mwa-RAY or more-RAY) pattern. Such patterns are created whenever two periodic structures are overlapped. The design in the diamond program is a moire-like pattern.

Listing 3, MOIRE.BAS, also draws a moire pattern, but it doesn't depend on overlapping structures and can create other designs as well. You can experiment with different values for Style, but Moire works best with Style<1. As well as using other mathematical functions to determine the color number, try these changes:

Change the 2 to a 3 in the following line:

```
C=(190-Int((Vert*Vert+Horz*Horz)^Style)/2)
```

Now delete the next line, and replace it with one of these:

```
C=Tan(C),
C=20 * Tan(C)
C=16 * Sin(C)
```

For additional interesting variations, you could also eliminate this line:

Plot 320-Horz1,Vert1:

Listing 4, STARS.BAS, creates a starlike design. The Rnd statement makes the computer generate a different design each time the program is run. Try:

1. Changing the range of J in the For statement. This changes the size of the design.
2. Increase or decrease the step size. Non-integer step sizes, such as 0.5, yield particularly interesting patterns.
3. Change the color statement using the math functions suggested previously. The Stars program runs in medium resolution as is.

Listing 5, SINESCAP.BAS, uses a series of sine waves to build an abstract design:

1. Change the equation Y=Amp*(Sin(X/Per-Phi))+Axis and the Draw To statements to:

```
Y=Amp*((Sin(X/Per-Phi))^2)
```

Plot X,Y

Draw X,Y+Axis To X,Axis-Y

2. Change:

Amp=Int(Map2 * Rnd(1)) to

Amp=.5 * Int(Plot2 * Rnd(1))

and change

Per=Int(100 * Rnd(1)+1) to

Per1=Int(100 * Rnd(1))

Below these changes, add the line:

```
Per2=Int(80 * Rnd(1))
```

Change:

```
Y=Amp*(Sin(X/Per1-Phi))+Axis to
```

```
Y=Amp*(Sin(X/Per1-Phi)+Cos(X/Per2+Phi/2))
```

and change

Draw X,Y To X,Axis to

Draw X,Y+Axis To Axis-Y

3. For Sine=1 to 10 is the line that controls the number of sine waves drawn on the screen. You may wish to change this value.

4. Experiment with color selection. Sinewaves runs in medium resolution if you increase the values to accommodate the screen dimensions and change the value of C.

Listing 6, PASCAL.BAS, creates the well-known image of Pascal's Triangle. Experimentation will yield some interesting new designs, but you'll no longer have the classic Pascal Triangle.

1. Change the range of I.

2. Change the DIMension of T.

3. Change colors by adjusting the values in the line:
C=2*(Not(T(A)))+8)

Marian Lorenz and Allan Moose are teachers on Long Island, New York. They have published a number of mathematics-oriented Antic programs for both the Atari 8-bit and ST computers.

Listing on page 75

ST PICTURE SCANNING ARRIVES

continued from page 44

mate any part of your digitized screen. With ST Scan, Cyber Paint and a little practice, you'll soon be producing feature-length, professional-quality animations.

DRAWBACKS

At this time, DEGAS is the only widely available graphics software that works with ST Scan. At 300 dpi in DEGAS mode, the scanner can only digitize a small fraction of a page. To manipulate the larger .IMG files, you'll need to use ST LaserPaint, PostScript, Easy Draw or other graphics packages which are not widely available for the ST.

Although most general hobbyists would reasonably question buying a \$1,239 peripheral that costs several hundred dollars more than a 1040ST computer, ST Scan might well be a bargain for a serious ST graphics worker, a small business or a large users group.

ST SCAN

Navarone Industries, Inc.
1043 Stierlin Road, Suite 201
Mountain View, CA 94040
(800) 654-2821—National
(415) 964-2660—California
Color or monochrome monitor
\$1,239

CIRCLE 295 ON READER SERVICE CARD

Atari Heats Winter Comdex

New "ST Super-Mini" draws the crowds

by ANITA MALNIG, START Editor

Atari used the November Comdex trade show in Las Vegas to stake a claim for the "power without the price" market in high-powered business workstations. Leading Atari's latest assault on Fortune 500 buyers is Abaq (root word for abacus), the new "transputer" previewed by **Antic** in January 1988.

With the Inmos 32-bit IMST-800 microprocessor and leading-edge RISC (Reduced Instruction Set Computer) architecture, Abaq will operate at 10 MIPS (million instructions per second). An ST or Mega becomes the input/output device for the transputer system.

A single transputer can deliver over ten times the power of an IBM PC/AT. But you can connect 10, 100 or even more transputers to create a relatively low-cost computer workstation with the power of a super-minicomputer. Talk is that the Abaq will retail in the \$5,000 range. Transputers can be linked by a built-in high-speed serial port to form a multiprocessor array or a local area network.

Helios, a Unix-like operating system for Abaq, was developed by the Perihelion Company of Great Britain, as was the transputer board itself. The Helios operating system encourages use of many small programs which work together to create a final product.

Shiraz Shivji, Atari's vice president of research and development, expects that the transputer will be used primarily in engineering and science applications. Included with Abaq will be a very high resolution monitor, capable of four graphics modes—1280×960 in 16 colors or monochrome, 1024×768 in 256 colors, 640×480 in 256 colors with two screens and 512×480 in 16 million colors plus overlay.

No firm delivery date is set, but late 1988 seemed to be the most talked-about time frame by Atari executives at Comdex. From **Antic**'s first-hand observation, crushing Comdex crowds were being attracted by Abaq's crisp, vibrant graphics—such as four separate pictures running simultaneously.

CD-ROM AT LAST

Shortly after **Antic**'s October 1985 cover story about the Atari 540-megabyte CD-ROM system running Grolier's encyclopedia on a single compact disk, Atari announced that it wouldn't bring this product to market until CD-ROM players dropped in price from \$1,000 to the \$500 range and included the capability of playing music from standard compact audio disks. That time apparently is

now!

The Atari CD-ROM is now supposed to be available in February, 1988, at a suggested retail price of \$599. The CD-ROM connects to ST and Mega computers through the DMA (direct memory access) communications port that transmits data at up to 10 million bits per second. The player provides near-instantaneous access to compact disks that store 540Mb of data—more than 1,000 floppy disks or 200,000 printed pages.

Demonstrated at Comdex was a visual dictionary from Facts on File. It categorized topics such as transportation or food. You could click on the transportation theme and choose from an array of topics such as ferries, container ships, airport terminals and so on—all items illustrated. Speech output identified each image in French and English.

DESKTOP PUBLISHING

Atari is marketing G.O. Graphics' sophisticated desktop publishing program, Deskset. This works as a front end to the CompuGraphics professional phototypesetting equipment, offering 1,800 fonts. Deskset could design entire commercial publications such as **Antic** and **START**.

Deskset, which runs only on a Mega, was demonstrated at Comdex on the Atari SLM804 laser printer. Deskset uses the GEM environment and offers all standard features of the most sophisticated desktop publishing programs—including kerning, columns, boxes, rules and the merging of text and graphics. Look for this product by late 1988.

MORE ATARI PCs

As the \$799 Atari PC1 first shown in January 1987 was just about to come to market, Atari announced expansions of its IBM-compatible line. The PC2 is a dual-speed XT compatible that adds five expansion slots to the versatile PC1 configuration. The PC4 is an IBM PC/AT-compatible that uses the 80286 microprocessor. It has switchable clock speeds of 8 or 12 Mhz, VGA-compatible video, four AT-style expansion slots, up to one megabyte of system RAM and accepts an 80287 numeric coprocessor.

Atari also announced "PromiseLAN," a local area network that will connect as many as 17 PCs, using off-the-shelf telephone wire. Soon to go under development are PromiseLAN adaptors for the Mega and ST computers. This would enable the Mega and the Atari laser printer to share data with PCs and Macintoshes.

BONUS ISSUE!

START Giving...



...an easy and inexpensive way to get the jump on the Holiday Season.

Give **START, the ST Quarterly**, to your favorite ST enthusiasts and help them get the most from their computers, year-round.

Like a high-tech Christmas stocking, every issue is packed with valuable articles, stuffed with practical tips and techniques. And, there's the Disk, loaded with programs both useful and fun.

A great gift for all seasons! Plus each subscriber will receive our additional Holiday Gift—The Atari ST Buyers Guide—A Bonus issue perfect for the ST owner!

So, skip the long lines at the cash registers. Just fill out an order card and mail right away.* (And, we won't bill you until after January 1, 1988.)

It's time to start giving...**START!**

For fast service on subscription orders:
800-234-7001
(6 am-6 pm PST. Monday-Friday)

*Until December 1, we will send Gift Announcement cards for your gift subscriptions to you. After December 1, we will mail the cards direct to those on your Gift List.

START
THE ST QUARTERLY



Get the lion's share online with GEnie.TM

"GEnie changed my mind about what an online service can do for me! I always knew that GEnie offered a princely selection of Special Interest Groups featuring thousands of software files, dynamic bulletin boards, lively discussions and "tips" from the experts. But now GEnie gives me more than my share of valuable information services like NewsGrid and USA Today Decisionlines, American Airlines EAASY SABRESM personal reservation system, new and exciting multi-player games and access to Dow Jones News/Retrieval®. And the people on GEnie are so friendly and helpful they make me feel like a member of royalty!"

You don't need to pay a king's ransom to get the lion's share, because only GEnie offers you so much online, for less."

B. A. King

Services Available	Compare Save	Pricing*			
		Registration Fee	Monthly Minimum	300 baud	1200 baud
Electronic Mail • CB • SIGs/User Groups • Travel • Shopping • Finance • Reference Professional • Leisure • Games • News	GEnie†	\$29.95*	None	\$5.00	\$5.00
	CompuServe	\$39.95	None	\$6.00	\$12.50
	Other	\$49.95	\$10.00	\$8.40	\$10.80

*\$18 Registration fee extended to 12/31/87.

Just \$5 per hour. Get online today!

1. Have your major credit card or checking account number ready.
2. Set your modem for local echo (half duplex)—300 or 1200 baud.
3. Dial 1-800-638-8369. When connected, enter HHH
4. At the U#= prompt enter **XJM11825, GEnie** then RETURN.

Need help or more information? No modem yet? We can help. In U.S. or Canada call **1-800-638-9636**.



We bring good things to life.

SOFTWARE DISOUNTERS OF AMERICA

S.D. of A.

**For Orders Only—1-800-225-7638
PA Orders—1-800-223-7784
Customer Service 412-361-5291**

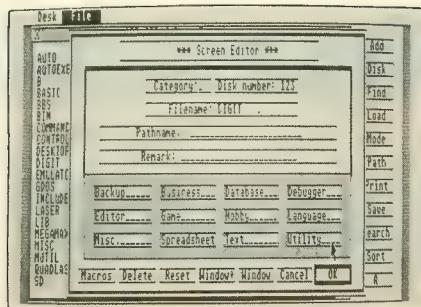
- Free shipping on orders over \$100 in continental USA
 - No Surcharge for VISA/MasterCard
 - Your card is not charged until we ship

P.O. BOX 111327—DEPT. AT—BLAWNOX, PA 15238

***Please Read The Following Ordering Terms & Conditions Carefully Before Placing Your Order:** Orders with cashiers check or money order shipped immediately on in stock items! Personal & Company checks, allow 3 weeks clearance. No C.O.D.'s! Shipping: Continental U.S.A.-Orders under \$100 add \$3; free shipping on orders over \$100. AK, HI, FPO, APO-add \$5 on all orders. Canada & Puerto Rico-add \$10 on all orders. Sorry, no other International orders accepted! PA residents add 6% sales tax on the total amount of order including shipping charges. **CUSTOMER SERVICE HOURS:** Mon.-Fri. 9 AM-5:30 PM Eastern Time. **REASONS FOR CALLING CUSTOMER SERVICE**—412-361-5291 (1)Status of order or back order (2)if any merchandise purchased within 60 days from S.D.of A. is defective, please call for a return authorization number. We will not process a return without a return auth. #1 Defective merchandise will be replaced with the same merchandise only. Other returns subject to a 15% restocking charge! After 60 days from your purchase date, please refer to the warranty included with the product purchased & return directly to the manufacturer. Customer service will not accept collect calls or calls on S.D.of A.'s 800# order lines! **ORDER LINE HOURS:** Mon.-Fri. 9 AM-5:30 PM, SAT 10 AM-4 PM EASTERN TIME. Because this ad had to be written 2-3 mos. before it was published, prices & availability are subject to change! New titles are arriving daily! Please call for more information.

Utility Toolbox

Super-Directory, M-Cache and Fast



SUPER DIRECTORY

The GEM-based **Super-Directory** disk-catalog program works with hard or floppy disks and supports printing or sorting operations. It also lets you put comments on each program. Booting Super-Directory brings up an empty window with dialog buttons on the side. Just click on the proper button to open a new dialog box.

You can load a directory file into memory, then append it to an existing file. First, choose a disk drive to read, then click on the ADD box which brings up a new dialog box. Now enter the identifier for the disk and all of the information will load in automatically. If you add no information to the file other than the name and the path, it'll take 10 to 15 seconds to read each directory on a disk. I can have up to 9,000 files on my 1040ST.

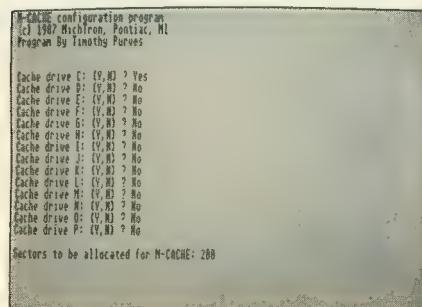
The SORT operation is the best part of this program. It's a real speed demon when finding and manipulating your files. In tests I ran, alphabetizing 2,000 files, sorting these alphabetized files by size, and finding all .PRG files each took about 15 seconds. The print utility has several options. But the major one is the ability to print information for each file with, for instance, a given extender.

Overall, this is a quick, user-friendly program. It has no bugs and is a fine

addition to the MichTron line.—SOL GUBER

\$39.95, MichTron, 576 S. Telegraph, Pontiac, MI 48053. (313) 334-5700.

CIRCLE 187 ON READER SERVICE CARD



M-CACHE

M-Cache is a combination of RAM-disk and hard disk—but without the drawbacks of either. If you're a hard disk owner, you'll find it a necessity for speeding up your accesses. This small RAM-resident program stores into memory the sector data you read. So when you access the data again, your ST will retrieve the data from RAM—which is even faster than your hard drive.

After the first time, the directory data is read almost instantly. You don't even hear your hard drive spin. A special algorithm determines the most commonly-read sectors and optimizes the use of the cached data, so your short, repetitive disk accesses are decreased. M-Cache also saves data to the hard disk as well as to RAM, preventing data loss if you have a sud-

den power outage.

M-Cache contains the caching program itself and the Installer, which lets you decide how much memory M-Cache will use (50 to 200K). It also lets you determine which hard disk partitions it will monitor.

After you boot up, there's no evidence that M-Cache is even there—but if, for instance, you write programs in Modula-2 where many link files are needed, M-Cache can speed up the compile time by about 50%. Any program that needs hard disk access and repeatedly uses the same files will operate much faster.—SOL GUBER

\$49.95, MichTron, 576 S. Telegraph, Pontiac, MI 48053. (313) 334-5700.

CIRCLE 188 ON READER SERVICE CARD

FAST DESKTOP ORGANIZER

Fast, a collection of desktop accessories, features a built-in DOS, Editor, Cardfile, Calendar, Clock, Calculator and ASCII Table. These all appear under one entry in the Desk menu—clicking on it brings up a window for you to select the tool you want.

ST-DOS is a resident disk operating system similar to MS-DOS. Once you learn it, ST-DOS can be more efficient than the GEM desktop. For example, to copy all the files with a .DOC extender from drive A to drive B, just type "COPY A:*.DOC B:"—much faster than clicking on each .DOC file

continued on page 54

Antic Online for instant Atari news!

**Log onto CompuServe
and type GO ANTIC**



Since 1981

Lyco Computer

Marketing & Consultants

Order processed within 24 hours.

Lyco Means Total Service.



Mark "Mac" Bowser, Sales Manager

I would personally like to thank all of our past customers for helping to make Lyco Computer one of the largest mail order companies and a leader in the industry. Also, I would like to extend my personal invitation to all computer enthusiasts who have not experienced the services that we provide. Please call our trained sales staff at our toll-free number to inquire about our diverse product line and weekly specials.

First and foremost our philosophy is to keep abreast of the changing market so that we can provide you with not only factory-fresh merchandise but also the newest models offered by the manufacturers at the absolute best possible prices. We offer the widest selection of computer hardware, software and accessories.

Feel free to call Lyco if you want to know more about a particular item. I can't stress enough that our toll-free number is not just for orders. Many companies have a toll-free number for ordering, but if you just want to ask a question about a product, you have to make a toll call. Not at Lyco. Our trained sales staff is knowledgeable about all the products we stock and is happy to answer any questions you may have. We will do our best to make sure that the product you select will fit your application. We also have Saturday hours — one more reason to call us for all your computer needs.

Once you've placed your order with Lyco, we don't forget about you. Our friendly, professional customer service representatives will find answers to your questions about the status of an order, warranties, product availability, or prices.

Lyco Computer stocks a multimillion dollar inventory of factory-fresh merchandise. Changes are we have exactly what you want right in our warehouse. And that means you'll get it fast. In fact, orders are normally shipped within 24 hours. Free shipping on prepaid orders over \$50, and there is no deposit required on C.O.D. orders. Air freight or UPS Blue/Red Label shipping is available, too. And all products carry the full manufacturers' warranties.

I can't see why anyone would shop anywhere else. Selection from our huge in-stock inventory, best price, service that can't be beat—we've got it all here at Lyco Computer.

TO ORDER, CALL TOLL-FREE: 1-800-233-8760

New PA Wats: 1-800-233-8760

Outside Continental US Call: 1-717-494-1030

Hours: 9AM to 8PM, Mon. - Thurs.

9AM to 6PM, Friday — 10AM to 6PM, Saturday

For Customer Service, call 1-717-494-1670,

9AM to 5PM, Mon. - Fri.

Or write: Lyco Computer, Inc.

P.O. Box 5088, Jersey Shore, PA 17740

Risk-Free Policy: • full manufacturers' warranties • no sales tax outside PA • prices show 4% cash discount; add 4% for credit cards • APO, FPO, International: add \$5 plus 3% for priority • 4-week clearance on personal checks • we check for credit card theft • compatibility not guaranteed • return authorization required • price/availability subject to change • Prepaid orders under \$50 in con., U.S. add \$3.00.

1-800-233-8760

SOFTWARE

ACCESSORIES

ATARI

ATARI ST

Diskettes

Broderbund:

Print Shop	\$25.49
Print Shop Compan	\$22.95
Graphic Lib I, II, III	\$13.49
Karateka	\$12.95
Bank St. Writer	\$27.95

Microprose:

Conflict in Vietnam	\$22.95
F-15 Strike Eagle	\$19.95
Kennedy Approach	\$13.95
Silent Service	\$19.95
Top Gunner	\$13.95

Optimized Systems

Action	\$44.95
Action Tool Kit	\$16.95
Basic XE	\$44.95

Strategic Simulations.

Battle of Antietem	\$28.95
Battlecruiser	\$33.95
Nam	\$22.95
Phantasia	\$22.95
Wargame Construc.	\$16.95
Warship	\$33.95
Wizards Crown	\$22.95

Sublogic:

Flight Simulator II	\$31.49
Night Mission Pinball	\$18.95
Scenery #1-#6 ea.	\$12.95
Scenery #7	\$14.95

Activision:

Champion, Baseball	\$22.95
Champion, Basketball	\$22.95
Championship Golf	\$New
GFL Football	\$22.95
Hacker 2	\$22.95

Microleague:

Microleague Baseball	\$33.95
General Manager	\$16.95
Wrestling	\$CALL

Firebird:

Pawn	\$25.95
Starglider	\$25.95
Golden Path	\$25.95
Guild of Thieves	\$25.95
Tracker	\$25.95

Monitors

Thomson:

230 Amber	
TTL/12"	\$85
450 Amber	
TTL/15"	\$129.95
4120 CGA	\$199.95
4160 CGA	\$259.95
4460 EGA	\$319.95
4375 Ultra Scan	\$459.95

230 Amber	
TTL/12"	\$85
450 Amber	
TTL/15"	\$129.95
4120 CGA	\$199.95
4160 CGA	\$259.95
4460 EGA	\$319.95
4375 Ultra Scan	\$459.95

230 Amber	
TTL/12"	\$85
450 Amber	
TTL/15"	\$129.95
4120 CGA	\$199.95
4160 CGA	\$259.95
4460 EGA	\$319.95
4375 Ultra Scan	\$459.95

230 Amber	
TTL/12"	\$85
450 Amber	
TTL/15"	\$129.95
4120 CGA	\$199.95
4160 CGA	\$259.95
4460 EGA	\$319.95
4375 Ultra Scan	\$459.95

230 Amber	
TTL/12"	\$85
450 Amber	
TTL/15"	\$129.95
4120 CGA	\$199.95
4160 CGA	\$259.95
4460 EGA	\$319.95
4375 Ultra Scan	\$459.95

230 Amber	
TTL/12"	\$85
450 Amber	
TTL/15"	\$129.95
4120 CGA	\$199.95
4160 CGA	\$259.95
4460 EGA	\$319.95
4375 Ultra Scan	\$459.95

230 Amber	
TTL/12"	\$85
450 Amber	
TTL/15"	\$129.95
4120 CGA	\$199.95
4160 CGA	\$259.95
4460 EGA	\$319.95
4375 Ultra Scan	\$459.95

230 Amber	
TTL/12"	\$85
450 Amber	
TTL/15"	\$129.95
4120 CGA	\$199.95
4160 CGA	\$259.95
4460 EGA	\$319.95
4375 Ultra Scan	\$459.95

230 Amber	
TTL/12"	\$85
450 Amber	
TTL/15"	\$129.95
4120 CGA	\$199.95
4160 CGA	\$259.95
4460 EGA	\$319.95
4375 Ultra Scan	\$459.95

230 Amber	
TTL/12"	\$85
450 Amber	
TTL/15"	\$129.95
4120 CGA	\$199.95
4160 CGA	\$259.95
4460 EGA	\$319.95
4375 Ultra Scan	\$459.95

230 Amber	
TTL/12"	\$85
450 Amber	
TTL/15"	\$129.95
4120 CGA	\$199.95
4160 CGA	\$259.95
4460 EGA	\$319.95
4375 Ultra Scan	\$459.95

230 Amber	
TTL/12"	\$85
450 Amber	
TTL/15"	\$129.95
4120 CGA	\$199.95
4160 CGA	\$259.95
4460 EGA	\$319.95
4375 Ultra Scan	\$459.95

230 Amber	
TTL/12"	\$85
450 Amber	
TTL/15"	\$129.95
4120 CGA	\$199.95
4160 CGA	\$259.95
4460 EGA	\$319.95
4375 Ultra Scan	\$459.95

230 Amber	
TTL/12"	\$85
450 Amber	
TTL/15"	\$129.95
4120 CGA	\$199.95
4160 CGA	\$259.95
4460 EGA	\$319.95
4375 Ultra Scan	\$459.95

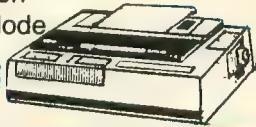
230 Amber	
TTL/12"	\$85
450 Amber	
TTL/15"	\$129.95
4120 CGA	\$199.95
4160 CGA	\$259.95
4460 EGA	\$319.95
4375 Ultra Scan	\$459.95

230 Amber	
TTL/12"	\$85
450 Amber	
TTL/15"	\$129.95
4120 CGA	\$199.95
4160 CGA	\$259.95
4460 EGA	\$319.95
4375 Ultra Scan	\$459.95

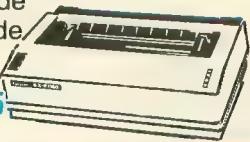
230 Amber	
TTL/12"	\$85
450 Amber	
TTL/15"	\$129.95
4120 CG	

Star**NX-10**

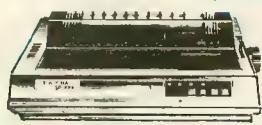
- 120 cps Draft
- EZ Front Panel Selection
- NLQ Mode

\$149⁹⁵**Panasonic
1080i Model II**

- Now 150 cps Draft Mode
- NLQ Mode

\$159⁹⁵**SEIKOSHA****SP 180Ai**

- 100 cps draft
- 20 cps NLQ

\$124⁹⁵**PRINTERS****SEIKOSHA**

SP 180Ai	\$124.95
SP 180VC	\$124.95
SP 1000VC	\$135.95
SP 1200VC	\$144.95
SP 1200Ai	\$155.95
SP 1200AS RS232	\$155.95
SL 80Ai	\$295.95
MP1300Ai	\$269.95
MP5300Ai	\$375.95
BP5420Ai	\$879.95
SP Series Ribbon	\$7.95
SK3000 Ai	\$349
SK3005 Ai	\$429

star
MICROBITS INC.

NP-10	\$134.95
NX-10	\$149.95
NX-10C w/interface	\$165.95
NL-10	\$199.95
NX-15	\$289.95
ND-10	\$259.95
ND-15	\$375.95
NR-15	\$409.95
NB-15 24 Pin	\$699.95
NB24-10 24 Pin	\$409.95
NB24-15 24 Pin	\$549.95
NX1000	\$New

EPSON

LX800	\$175.95
FX86E	\$289.95
FX286E	\$429.95
EX800	\$374.95
EX1000	\$509.95
LQ800	\$369.95
LQ1000	\$549.95
LQ2500	\$849.95
GQ3500	\$LOW
LQ850	\$499.95
LQ1050	\$679.95

Panasonic

1080i Model II	\$159.95
1091i Model II	\$179.95
1092i	\$295
1592	\$379
1595	\$419
3131	\$259
3151	\$399
KXP 4450 Laser	\$CALL
1524 24 Pin	\$549.95

Toshiba

321SL	\$489
341 SL	\$659
P351 Model II	\$899

SILVER REED

EXP 420P	\$199
EXP 600P	\$299.95
EXP 800P	\$649

DIABLO

D25	\$499.95
635	\$779.95

Call About ATARI PC Availability!**ATARI®****520 ST-FM
Color System****\$799⁹⁵**Internal
drive
included**ATARI®****520 ST-FM
Monochrome
System****\$659⁹⁵**Internal
drive
included**ATARI® HARDWARE**

520 ST FM Mono	\$659.95
520 ST FM Color	\$799.95
1040 ST Mono	\$779.95
1040 ST Color	\$925.95
130XE Computer	\$125.95
SX551 Drive	\$179.95
SF 314 Disk Drive	\$199.95
SF 354 Disk Drive	\$119.95
Indus GT Atari Drive	\$175.95
SHD 204 20 MEG Drive	\$569.95
XM301 Modem	\$42.95
SX212 Modem	\$89.95
GTS 100 (3.5" DSDD ST)	\$195.95

ATARI®**1040 ST
Color System****\$925⁹⁵****ATARI®****1040
Monochrome
System****\$779⁹⁵**

**ATTENTION
Educational Institutions**
If you are not currently using our educational service program, please call our representatives for details.

Join the thousands who shop Lyco and Save!

ST UTILITY BOX

continued from page 51

in a window and dragging it to the drive icon. Among other things, you can set time and date, get a directory, see the contents of a file, rename or delete a file, and set an alarm. The formatting option supports four different formats, including two that can store more information than usual on a disk.

ST-EDIT, a full-screen text editor, is more like the MINCE programming editor than a word processor. It uses the entire screen, so you can't enter notes while looking at other information on the screen, and all commands are entered via the keyboard. ST-EDIT supports search, replace, block moves, copies and deletes, letter transposing, and some limited macros for using in the editing sessions. There's no wordwrap, and if you don't press [RETURN] at the end of every line, then the number of "physical" lines will be different from the number of "logical" lines.

CARDFILE is a three-level address book. In Level 1, you can print all the cards in the file, select one of two formats for all printing (list or label), and change the field names on the cards. Level 2 shows all the cards beginning with the area selected. You can edit, delete or print selected cards, create a new card, or autodial one of the two phone numbers on the card. Creating or modifying a card brings you to level 3, where you actually enter information on the card, save it or print it.

Fast also has a digital clock, an ASCII/decimal/hex table, a four-function calculator and a calendar displaying one month at a time. (You cannot access any date before 1980.)

The documentation has several mistakes and typos. Sometimes the picture of a screen or dialog box doesn't match the description, or text is missing or nonsensical. The ST-DOS section assumes you know quite a bit about MS-DOS.—DAVID PLOTKIN ■

\$49.95. Migraph, Inc., 720 S. 333rd Street, Federal Way, WA 98003. (206) 838-4677.

CIRCLE 189 ON READER SERVICE CARD

Games Gallery

Reviewing 9 varied ST entertainments

STATIONFALL, LURKING HORROR, MOONMIST

Infocom's most recent all-text adventures cover a wide variety of interactive fiction experiences.

Stationfall picks up five years after the popular Planetfall adventure, when you were a lowly Stellar Patrol ensign who became shipwrecked on the planet Resida. While saving it from destruction, you met and befriended Floyd, a somewhat dizzy robot who'd often go off and play hide-and-seek. Now as a reward for your heroism, you're a lieutenant—but things aren't a whole lot better.

Your new assignment is to pick up a load of forms from a nearby space station. Fortunately, you get to requisition a robot to take along. (Guess who?) You and Floyd discover the station abandoned: the crew had towed in a derelict spaceship containing a mysterious device—which affected all the machinery aboard the station. Even now, you can no longer rely upon Floyd.

The game is written with the same light-hearted tone that made Planetfall such a delight. In-jokes and references to earlier Infocom games are commonplace. The puzzles are of average difficulty, and the one involving decoding an alien message is especially clever. Stationfall is a story full of challenge, humor and suspense.—HARVEY BERNSTEIN

You'll want to play **The Lurking Horror** if you prefer the creepy feeling of something not-quite-human under the bed. Infocom's first all-out horror tale is written in the vein of H.P. Lovecraft and Stephen King. Unfortunately, it's rather disappointing.

You're working late in the computer center at G.U.E. Tech. When you accidentally access a file belonging to

the Alchemy Department, you end up in the deepest recess of the school's basement. You must find your way out of a supernatural world filled with giant rats, demons and sacrificial rituals.

While well-written, Lurking Horror is as heavy as Stationfall is light, and that is its main problem. The text is dry and uninviting. I yearned for the standard touch of Infocom humor. Rather than being a part of the story and feeling chills down my spine, I never lost the feeling that I was just interacting with words on a screen.—HARVEY BERNSTEIN

Moonmist is Infocom's first gothic romance. Your friend Tamara's letter from a castle in Cornwall was full of hope, joy and anticipation—she's engaged to marry Lord Jack Tresyllian. But the next letter, just four days later, contains none of that joy. Tamara thinks someone's trying to kill her. And that someone just might be a ghost, so she wants you to come and help.

Deceased Uncle Lionel has hidden a treasure in the Cornwall castle. Any of the people currently lodging there might murder for the treasure. That, at least, would be a more down-to-earth explanation of the attempts on Tamara's life than a ghost—or would it?

The Tresyllian Castle is the perfect place for such an adventure. Secret passages, doors and rooms add to the challenge and create an aura of mystery. In some games, once the mystery has been solved, the game goes on the shelf for good. Not so with Moonmist. There are four different versions of the game on disk, each with a different guilty party—perhaps—and slightly different plot details. Which version you play depends on your answer.

continued on page 56

GFA BASIC and Accessories...

GFA BASIC

Finally there is a fast, accurate, structured language available for the ST. This compact, high-speed interpreter takes only 57K of memory and runs programs as fast as those compiled in Pascal! *GFA BASIC* is incredibly easy to learn. In no time at all you'll be using the friendly editor to write your own GEM programs. The versatility and power of this structured language package puts all the speed and graphics of the Atari ST at your command.

\$79.95

GFA Compiler

This fast, 2-pass Compiler converts your finished *GFA BASIC* programs into compact, faster-running machine-language files. These self-contained files run without the aid of a runtime module! *GFA Compiler* greatly enhances the speed and power of the already superb *GFA BASIC*.

\$79.95

GFA Vector

Now you can create and manipulate astounding images and optical effects, and place them into your *GFA BASIC* programs. Since *GFA Vector* creates pictures written entirely in machine language, you are able to rapidly update the screen, thus allowing the creation of real life animations!

\$49.95

GFA Companion

GFA BASIC owners now have an incredibly useful tool available that will cut the time and annoyance often associated with programming in GEM with BASIC. *GFA* users can build Radio Button Boxes, Dialog Boxes, Help Boxes, Sliders, Error Boxes and more with *GFA Companion*.

\$49.95

GFA Object

GFA Object is a program for constructing three dimensional pictures that can be manipulated in free space through rotation, re-sizing, and displacement. Objects created in *GFA Object* can be used in *GFA Draft Plus*, *GFA BASIC*, and *GFA Vector*. *GFA Object* is a great addition to your *GFA* library!

\$99.95

ST Replay

ST Replay is an exciting program that allows you to digitize sounds, music, even your own voice which can then be put into your own *GFA BASIC* programs. *ST Replay* is the utility that will allow you to improve the quality of your *GFA BASIC* programs.

\$159.95

Easy Record

Easy Record means simple record management! *Easy Record* allows access to a sophisticated B-tree record storage management system within your *GFA BASIC* programs. This C programmer's utility handles all the details of file operations, letting you get back to creating!

\$79.95



For more information
on these or other programs,
ask for our latest catalog!

576 S. Telegraph
Pontiac, MI 48053
(313) 334-5700

Dealer inquiries welcome.
Visa and Mastercard accepted.

sver to a question upon arriving at the castle.

Most of the riddles in Moonmist are in the form of limericks or puzzles left by good old Uncle Lionel, who wanted to make the treasure-hunters work. The riddles themselves aren't difficult, but applying them to finding the treasure is a different matter entirely. Another interesting aspect of Moonmist is that you can play as a male or female character. Jack, Tamara and the guests in the castle react to you according to your sex. The game's parser is flexible and does a good job of letting you know what it doesn't understand. Save the game often. There aren't many dangers to your personal safety, but the blind alleys you could (and will) stumble into will waste precious time.—RICK TEVERBAUGH

\$39.95 each. Infocom, 125 Cambridge-Park Drive, Cambridge, MA 02140. (617) 576-3190.

CIRCLE 183 ON READER SERVICE CARD



VEGAS GAMBLER, VEGAS CRAPS

In **Vegas Gambler** you can play the slots, blackjack, poker machine and roulette. **Vegas Craps** has just a craps table, but because the game has so many betting options, a program containing them all *must* be complex. However, playing Vegas Craps is actually quite simple. The game has a well-written 29-page manual and descriptive onscreen help. To place bets, just drag your chips to the correct position on the table. Then click on the dice.

Vegas Gambler isn't much different from other gambling game packages. The slot machine is just as boring—the hypnotic fascination you'd experience at a casino with one-armed

bandits doesn't translate well. But the blackjack simulation is excellent and its simple rules and complex strategy are engrossing. This one is worth the price of the entire package.

The standard five-card poker machine is entertaining, but I prefer human opponents. Roulette resembles craps in some regards, most notably in the variety of bets allowed. Strategy is limited, but roulette is so much a part of the mental picture of casinos that its inclusion in the program was a must.

In **Gambler** you start with \$500 and can carry your stake from game to game. You can also save the amount and continue later. In **Craps**, however, you start with \$1,000, which you can't transfer to or from **Vegas Gambler**. At some point during either game, the program will ask for a code from the enclosed security card. This makes it easy to back up your copy, but not to provide copies for the entire neighborhood.—RICK TEVERBAUGH

\$34.95 each. Logical Design Works, 780 Montague Expressway #403, San Jose, CA 95131. (408) 435-1445.

CIRCLE 182 ON READER SERVICE CARD

ROADWAR 2000

It's the end of the 20th century and terrorists have launched a germ-warfare attack on the United States. Chaos reigns. Cities throughout North America are partly controlled by one vicious faction or another. The roads themselves are fair game, with armed, wheeled gangs attacking people for gasoline and supplies. If **Roadwar 2000** smacks of "Mad Max," you've got the right idea. As a road gang leader, you must take control of as many cities as possible, manage supplies and add new members to the gang.

Eventually you're recruited by the Government Underground Biolab, which is trying fervidly to cure the disease. Your ultimate goal is to find eight missing scientists and return them to the lab, where they can continue their work. Exciting? Guess again.

There are three types of combat

against rival gangs. In **Tactical combat**, the player has control over each vehicle's movement and firing. But **Tactical battles** are long and boring. In **Quick battles** and **Abstract battles**, the computer resolves everything, but the text messages scroll by too quickly to absorb. The only difference I've noticed between **Quick** and **Abstract** battle is that in **Abstract**, adversaries ram each other, and in **Quick**, they can also shoot each other.—HARVEY BERNSTEIN

\$39.95. Strategic Simulations, Inc., 1046 N. Rengstorff Avenue, Mountain View, CA 94043. (415) 964-1200.

CIRCLE 184 ON READER SERVICE CARD



MICRO LEAGUE BASEBALL II

Micro League II features relatively realistic ball and player movement, a waving crowd, an active scoreboard and, especially, the statistics and numerically-represented characteristics of baseball players, real or imaginary.

But for all the entertainment potential and the "What If?" possibilities—"How would Ted Williams fare against Dwight Gooden?" and "Could the '75 Reds hold their own against the '61 Yanks?"—**ST Micro League** is a bit disappointing. Much more could have and should have been done with the **ST** edition of this game.

In a way, the graphics in the **ST** game are so improved that its visual shortcomings stand out more. The graphics often belie the scoreboard's descriptions: "A rocket out to center. . . Mays on his horse. . . He's got it! Holy Toledo!"—yet the center fielder stands stock-still.

Positive changes, however, include the addition of knockdown pitches

(violent, dangerous—but part of the game) and brief, entertaining remonstrations, as well as rain delays. Players may have to leave the game because of injury—and managers because of ejection. And outfielders now can throw out batter-runners trying to stretch singles into doubles, etc.

In Micro League II's "Quik-Play" option, the game rapidly plays itself, sans graphics (or human participation), and displays the statistics. In fact, game stats pop up after *every* Micro League II game, and you can compile them for either or both teams. In short, Micro League's Box Score/Statistics disk, sold separately for the Atari 8-bit, is now "built in" to ST Micro League.

Ballpark factors are now at least partially considered. (These are crucial: some stadiums significantly increase offense potential, others decrease it.) And if the home team plays in a stadium with artificial turf, the graphics show a synthetic turf field, and the game reflects the differences between baseball played on grass and on Astroturf.

But the game should have better command of some baseball rules, especially those regarding the designated hitter and awarding saves for pitchers.—GREGG PEARLMAN

\$59.95, color monitor required. Micro League Sports Association, 2201 Drummond Plaza, Newark, DE 19711. (302) 368-9990, (800) PLAYBAL.

CIRCLE 200 ON READER SERVICE CARD



221-B BAKER STREET

Sherlock Holmes has been so enduring a literary character that it was only a matter of time before a computer game appeared that would recreate the feel of 19th century Lon-

don, plunging the player into the midst of Sherlockian adventure. I'd love to report that **221 B-Baker Street** is that game. Unfortunately, I can't.

Baker Street, adapted from a board game, can be commended for at least being one of the few computer games that supports multi-player interaction. One to four players compete to solve one of 30 cases in a case book that accompanies the disk. Assuming the role of Holmes, Dr. Watson, Inspector Lestrade of Scotland Yard, or Irene Adler, each player races around a simulated board. Upon arrival at the Theater, Bank, Tobacconist's, etc., you're given a clue. When you think you know the solution, you must race back to Baker Street and successfully answer questions about the case before your opponents do.

There are problems. Not only are the cases easy, but there's no logic in where to find valuable clues. For example, a murder is committed at the theater. However, going to the theater first won't help any more than going to, say, the druggist. Also, there's little deduction involved. Instead, most clues are word puzzles—sometimes misspelled!—that even the youngest player can solve easily.

What we have is little more than a game of luck, with an electronic roll of the dice having more bearing over who'll solve the case first than deductive prowess. There is some strategy involved, as players can make clue locations inaccessible to other players. However, when it comes to recreating the world of Sherlock Holmes, 221-B Baker Street just doesn't cut it. I will admit that the graphics are fairly good but, aside from a handful of quotes in the documentation, no attempt is made to capture the style of Sir Arthur Conan Doyle's beloved text. —HARVEY BERNSTEIN

\$29.95. Datasoft, 19808 Nordhoff Place, Chatsworth, CA 91311. (818) 886-5922.

CIRCLE 186 ON READER SERVICE CARD

SUB BATTLE SIMULATOR

Epyx must be very high on **Sub Battle Simulator** to think it could

compete with such excellent submarine simulations as Silent Service and Gato. Certainly the graphics are excellent—the outlines of the enemy ships are incredibly detailed—and there's a complete 32-page manual. But Sub Battle isn't a good all-around effort.

It does have more options than any other simulation I've seen. You can choose from Target Practice, Single Mission and Wartime Command. In the last two options you can play either the German or American side. The German commander begins in 1939, fighting the U.S. and British forces. The American commander starts in 1942 against the Japanese Fleet in the Pacific. A time-compression feature speeds things up, especially during Wartime Command.

On the main viewing screen, the control panel contains periscope height and remaining ammunition. Another section relays messages from crew members. Also displayed are depth, speed, heading and viewing screen direction. The menu bar across the top, among other things, lets you save a game. The viewing screen can show periscope, binocular and tower views, sonar or radar screens, map display or a side view—especially helpful if you're being hit by depth charges.

Now we come to the weaknesses. While submerged and closing in on an enemy convoy, I was told I was in shallow water, so I surfaced. The depth gauge showed me to be on the surface, but when I wanted to shift to diesel power and conserve batteries, I was told to wait until we surfaced. Other problems include being able to sink big enemy ships with just gunfire, and the ability of the enemy to stay directly overhead for long periods even though you aren't being picked up by their sonar. Perhaps Epyx tried too hard to get Sub Battle out before all the sub warfare fans had chosen other simulations.—RICK TEVERBAUGH ■

\$39.95. Epyx, 600 Galveston Drive, P.O. Box 8020, Redwood City, CA 94063. (415) 366-0606.

CIRCLE 185 ON READER SERVICE CARD

ST Resource

ST New Products

By GREGG PEARLMAN, *Antic Assistant Editor*

IT'S MAC TONIGHT

Use Macintosh software on your ST with help from Data Pacific's long-awaited three-program package, **Magic Sac Professional**. Magic Sac Plus is what lets your ST run Mac software; Translator One lets your ST drives read and write to Mac disks and convert between ST, Mac and IBM PC formats. The Magic Epson Printer driver lets you print with all Epson and Epson-compatible 9-pin and 24-pin printers.

\$449.95. Data Pacific, Inc., 609 E. Speer Blvd., Denver, CO 80203. (303) 733-8158. FINAL.

CIRCLE 281 ON READER SERVICE CARD

PRINT IN UNISON

Create customized signs, banners, stationery, calendars and greeting cards with the flexible **PrintMaster Plus**. Each design option—text, graphics and layout—can be addressed repeatedly, in any order, before the final printout. You can also preview your work at each step of the design process. You'll have over 100 graphics to choose from, and over 280 more are readily available. PrintMaster Plus has a built-in graphics editor and 10 fonts—all but two of which allow upper and lowercase lettering.

\$39.95. Unison World, 2150 Shattuck Avenue, Suite 902, Berkeley, CA 94704. (415) 848-6670. FINAL.

CIRCLE 280 ON READER SERVICE CARD

HASTA BE A TWIST

Pinball Wizard, an action-oriented pinball simulation and building set, takes full advantages of the ST's color and sound capabilities and features detailed graphics, lights and sounds that give you the feel of playing actual pinball. This one-to-four-player game has four different simulations, complete with backboard, flippers, tilt sensors, etc. Difficulty levels can be adjusted for each table. The parts and paint menu contains targets, flippers, bumpers, spinners and discs, and you can install a stroboscope, which makes the ball disappear intermittently.

\$34.95. Accolade, 20813 Stevens Creek Blvd., Cupertino, CA 95014. (408) 446-5757. PRESS.

CIRCLE 282 ON READER SERVICE CARD

CACHE ON HAND

The **Discache** hard and floppy disk-caching system stores frequently accessed sectors in RAM so you can access them more quickly. Flexible and easy to use, the GEM-based Discache caches single-sector and multiple-sector reads. It runs on any ST, including the Mega.

\$34.95. Amgem, Inc., P.O. Box 1338, Bethesda, MD 20817. (301) 762-8870. PRESS.

CIRCLE 278 ON READER SERVICE CARD

MARVIN SOUNDWAVE

The **Marvin Transientenrekorder** is a digital oscilloscope that gives you 15 channels, 20 milliseconds per 8-bit sample with one channel, complete GEM interface, 20 mHz bandwidth, 277L and analog inputs, and the capacity for 16,000 samples per channel.

Marvin AG, Fries-Str. 23, 8050 Zurich, Switzerland. 01/302 21 13. PRESS.

CIRCLE 275 ON READER SERVICE CARD

TERRORPODS

Terrorpods features a Nationality Selection Screen—enabling you to play this strategy-arcade game in one of several languages, including American English and British English. The fully scrolling 3-D playfield will keep you on your toes as you head toward the asteroid Colian to discover the secret of the Empire's ultimate fighting machine—the Terrorpod.

About \$44. Psygnosis, Ltd. U.S. Distribution: Computer Software Services, 2150 Executive Drive, Addison, IL 60101. (312) 620-4444. PRESS.

CIRCLE 285 ON READER SERVICE CARD

SENTRY

In **The Sentry**, a dynamic environment of some 10,000 unique landscapes and the press of time conspire to make your life miserable. You, as a lone robot, fight the Sentry and her Landgazers while you attempt a *coup d'état*—which will never come off if you're not careful to avoid her energy-absorbing stares. The Sentry comes with an illustrated booklet, a key guide and a pin-on button.

\$44.95. Firebird, 71 N. Franklin Turnpike, Waldwick, NJ 07463. (201) 444-5700. PRESS.

CIRCLE 284 ON READER SERVICE CARD

ST VEGAS

Play the slots, keno, blackjack and a draw poker machine in **Video Vegas**. They look, feel and play like their Las Vegas counterparts, and blackjack includes a card counting feature.

\$34.95. Baudville, 5380 52nd Street, Grand Rapids, MI 49508. (616) 957-3036. PRESS.

CIRCLE 283 ON READER SERVICE CARD

SPRITES

ST Sprite Factory consists of four programs: the arcade game programming utility for sprite-based games that can have more than 500 screens; a game map-making program; a joystick program that lets you create a sequence of movement, frame by frame; and a demonstration of fine and coarse scrolling. OSS Pascal source code is included for the first three programs, and a collision detection tutorial is included as well.

\$39.95. Future Software Systems, 21125 Chatsworth Street, Chatsworth, CA 91311. (818) 341-8681. FINAL.

CIRCLE 279 ON READER SERVICE CARD

MU-SCRIPT I

MU-Script I, a slightly scaled-down version of MU-Script II, has a 16-track sequencer, MIDI event editor and multi-staff notation. Quantizing, autopunching and individual event editing are all at your disposal, and individual tracks can be assigned to any MIDI channel and scaled to any of 16 volume levels for multi-synthesizer or multi-tymbral setups. A single track can be split into treble and bass tracks.

\$99.95. Quiet Lion, P.O. Box 219, Sun Valley, CA 91353. (818) 765-6224. PRESS.

CIRCLE 269 ON READER SERVICE CARD

SIX FROM TDC

TDC Distributors have released the following games for the ST: **Aliants: The Desperate Battle for Earth**, **Stock Market**, **Time Blast**, **Knicker Bockers**, **Liberator** and **Mouse Trap**. All games cost between \$14.95 and \$29.95.

TDC Distributors, Inc., 3331 Bartlett Blvd., Orlando, FL 32811. (800) 289-8900, (305) 423-1987 in Florida. PRESS.

CIRCLE 268 ON READER SERVICE CARD

continued on page 62

ST Music

DXMATE, Music Construction Set

DXMATE

DXMATE is a patch editor/librarian program for the widely used Yamaha DX 21/27/100 four-operator keyboard synthesizers. There are three classes of functions for a patch editor program: system setup, librarian manager and sound editor. While the GEM-based DXMATE does some of these very well—particularly the multitude of patch parameter change options—it falls short in others.

The program runs only with a monochrome monitor—unfortunate, as only about 20% of the ST owners in the United States have monochrome systems. The accompanying manual is well written, and contains numerous screen displays—which is important, as no telephone number for the company is given.

Patch editing is the heart of DXMATE and it does this very well. All patch parameters are laid out on a single screen, including graphical representations of the four-operator and pitch envelopes. Performance parameters such as breath controller, modulation wheel, and foot controls, are accessed within a separate window activated from the drop-down menu. The UNDO function restores the last 30 changes made, one by one. The COMPARE function compares an edited patch with its original version.

For system setup operations, you can't use a master keyboard with rechannelization of MIDI output channel. You can play the synth keyboard while editing a patch to evaluate the sound. Alternatively, various computer keys have been mapped to play notes ranging from C2 to G4. For this, note velocity and duration can be set to one of five levels. The online help is excellent. A nice feature is a 1500 MIDI event sequencer that lets you set up a short piece to play

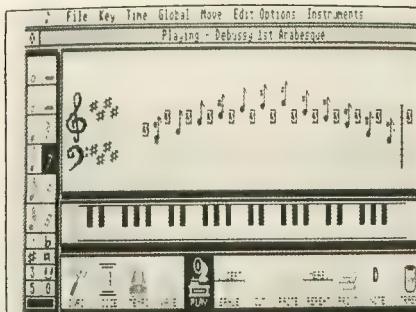
while evaluating patches. Sequencer data can be saved to disk, but only the synth keyboard can be used for entering the data.

Librarian functions are the weakest part of the program. Only a single patch bank is supported, which prevents easy patch relocation.

The bottom line is that while DXMATE does offer a versatile parameter editing interface, the rest of the program is not up to the quality of its competition. The limited librarian features, lack of hardcopy and restriction to monochrome systems are important minuses.—JIM PIERSON-PERRY

\$99. Synchro-Systems, P.O. Box 3093, Saskatoon, Saskatchewan, S7K 3S9, Canada.

CIRCLE 190 ON READER SERVICE CARD



MUSIC CONSTRUCTION SET

Music Construction Set has every feature you could ask for in a music program for hobbyists. Its wonderful user interface consists of logically arranged, well-organized icons and pull-down menus. You can set tempo and time signatures, transpose, set sharps and flats, and vary note duration. Functions such as inserting, cutting and pasting can be performed with word processor-like ease via the mouse or simple keyboard commands. Note durations, rests, sharps, flats, etc., are easily changed with a

mouse click.

The built-in eight-point wave generator lets you custom-tailor the sounds generated by the ST's sound chip. A set of 16 types of sounds ranging from pianos to percussion instruments are included along with several pre-composed musical selections. If all this isn't enough, the program generates printouts, and almost all user parameters are fully configurable. As a grand finale, the program can use MIDI for input and output. The only limitations are that you must load in the song that you want to play before running another application, and that only one song can be loaded at a time.

But despite these glowing words, this program is *not* for me. It seems as if the programmers paid careful attention to ease of use but not enough attention to actual *usefulness*. The program supports only *three* MIDI channels, three internal ST sounds or a combination of the two. This means that only such combinations as two MIDI voices and one ST voice are allowed. For the more serious user, this puts this program into the musical toy category. Also, no tracks are supported. There is *no* reason why this program could not support more than three voices out of 16.

Still, for around \$50 this program is unbeatable for music students or for those who love to tinker with sounds. Even at \$75-\$100, with the addition of tracks and support of all 16 MIDI channels, this program could possibly become the one of the most flexible music software packages available written for the Atari ST.—ROGER YAP JR.

\$49.95, color monitor required. Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. (415) 571-7991.

CIRCLE 191 ON READER SERVICE CARD

THE FLIGHT CHOICE!

From the sophisticated realism of Flight Simulator

Atari ST screens shown.
Other computer versions may vary.

...to the thrills and excitement of Jet-

...to new Scenery Disk adventures. SubLOGIC Make The Flight Choice

See Your Dealer. For additional
product ordering information or
the name of the dealer nearest
you, call (800) 637-4983.

SubLOGIC

Corporation

713 Edgebrook Drive

Champaign IL 61820

(217) 359-8482 Telex: 206995

ORDER LINE: (800) 637-4983

(except in Illinois)



3D STEREOSCOPIC COMPUTING



Atari ST dealers and users: Enter the next dimension in computer graphics.

Watch game objects fly right out of your CRT. Discover the true structure of a molecular model. Weave your way through an infinite geometric universe.

LC Technologies' StereoTek™ system adds the ultimate in depth to Atari® ST computer graphics—true 3D displays in full color or high-res monochrome.

Simply connect a pair of StereoTek glasses to an Atari ST game cartridge port and load the appropriate software (see list). You're on your way to an entirely new visual experience, both in entertainment and education.

The StereoTek system includes a pair of Liquid Crystal Shutter glasses, connecting cable, and an ST cartridge interface unit that supports two pairs of glasses. You also get complete documentation, the DEGAS Elite Stereo Desk Accessory, and Stereo CAD-3D by Tom Hudson.

Software now available in StereoTek 3D

Shoot-The-Moon

Cyber Studio: CAD-3D 2.0 and Cybermate

Cyber Control

3D Developers Disk

3D Design Disks

LCS Wanderer

Genesis' Molecular

Modeling

Maps and Legends

With much more coming soon!

Contact your local Atari dealer for
StereoTek 3D glasses.

StereoTek System \$149.95*

Extra Glasses \$99.95*

Dealer ordering information:

Call 24 Hours Toll Free

1-800-426-2200

Ask for the StereoTek Operator.

STEREOTEK™

LC TECHNOLOGIES

A Tektronix Company



ST Resource

ST New Products

continued from page 68

DARK CASTLE

The superbly animated **Dark Castle** features more than 70 digitized sound effects, including a hair-raising organ solo and the screams of the Black Knight's prisoners. On your quest to find the Black Knight and clean his clocks, you must fight your way through 14 increasingly difficult rooms. Standing in your way are plague-infested rats, vicious bats and a fire-breathing dragon, not to mention the dungeon's torturer and a diabolical wizard.

\$39.95. Three Sixty Inc., 2105 S. Bascom Avenue, Suite 290, Campbell, CA 95008. (408) 879-9144. PRESS.

CIRCLE 256 ON READER SERVICE CARD

QUIZPLUS

This mouse-driven quiz and tutorial program has the "plus" of displaying DEGAS-format graphics *during* the quiz or tutorial. **QuizPlus** is designed for the educator who uses the ST for student instruction. A few simple QuizPlus commands turn a quiz into a colorful educational experience.

\$29. Mad Scientist Software, 2063 North 820 West, Pleasant Grove, UT 84062. (801) 785-3028. PRESS.

CIRCLE 277 ON READER SERVICE CARD

TAKE IT ALL OFF

Now there are two more female **Data Disks** for Strip Poker by Artworx. Disk 4 features Dawn and Crystal, and Disk 5 has Cynthia and Janice. Each disk was done by a different artist, providing variety in appearance, personality and style of play. These disks require the Strip Poker master disk.

\$19.95 each. Artworx Software Company, Inc., 1844 Penfield Road, Penfield, NY 14526. (716) 385-6120; (800) 828-6573. PRESS.

CIRCLE 259 ON READER SERVICE CARD

WHERE'S REALITY?

ARM+C and **ARM+D** are detailed city and dungeon maps for Alternate Reality. (**Antic** review 11/87.) **ARM+C** (\$4.95) points out every guild, bank, casino, dungeon, secret wall, etc. Also included is a list of 52 potions, a two-year calendar and a journal log sheet. **ARM+D** (\$5.95) shows all four levels of the dungeon and includes a journal log sheet, as well as hints on game play. The maps cost \$10 together.

Mars Merchandising, 15 W. 615 Diversey, Elmhurst, IL 60126. (312) 530-0988. PRESS.

CIRCLE 251 ON READER SERVICE CARD

CROSS-DEVELOP

Memocom's **Universal Cross-Development Kit** includes a table-driven cross-assembler, source/text editor, communications software and MEMULATOR II in-circuit EPROM emulator. The cross-assembler includes tables and sample source programs for 20 different microprocessors. You can create, edit and assemble source programs for almost any 4-, 8- or 16-bit microprocessor or microcontroller.

\$575. Memocom, 1920 Arbor Creek Drive, Carrollton, TX 75010. (214) 446-9906. PRESS.

CIRCLE 257 ON READER SERVICE CARD

CATALOGGER & LOCATOR

Coin and stamp enthusiasts can use **The Catalogger** to find any item in their collections, and **The Locator** lets them find items in whatever type of collection or context they set up. Both programs feature powerful search, sort and update routines, file boxes, pull-down menus and built-in help screens. The programs' multi-key search quickly finds any item in a database of up to 1,500 items. Also included is a mini-spreadsheet.

\$17.50 each. Rascom, 22128 Newkirk Avenue, Carson, CA 90745. PRESS.

CIRCLE 271 ON READER SERVICE CARD

DIET RIGHT

This nutritional analysis program was written by two M.D.'s. **Diet**'s features include weight loss and daily caloric requirements, exercise caloric expenditures, an expendable GEM-based menu planner and calorie counter, ideal diet and body weight recommendations and complete documentation. Co-developed by Ron Schaefer, author of **BASIC Alert** (**Antic**, March 1987).

\$25. Schaefer Supergraphics, 1201 Wilder Avenue #1801, Honolulu, HI 96822. (808) 523-3353. PRESS.

CIRCLE 258 ON READER SERVICE CARD

EASY SLEAZE

Life as we know it would lose considerable charm without polyester. That's why there's **Leisure Suit Larry in the Land of the Lounge Lizards**, Sierra's 3-D animated adventure game. Gamble, drink yourself silly and indulge in a ridiculous amount of "adult fun." The game's 50 fully-animated scenes offer slot machines and blackjack—which are just like their Las Vegas counterparts—as well as full facial views and expressions (which demonstrate the importance of just the right kind of pickup lines).

\$39.95. Sierra On-Line, Inc., P.O. Box 485, Coarsegold, CA 93614. (209) 683-6858. FINAL.

CIRCLE 263 ON READER SERVICE CARD

New ST product notices are compiled from information provided by the products' manufacturers. **Antic** assumes no responsibility for the accuracy of these notices or the performance of the product. Each mention is followed by a code word indicating that, at press time, **Antic** had seen a FINAL marketable version, near-final BETA, earlier ALPHA, incomplete DEMO, or PRESS release.

Coming in the March 1988 **Antic**

Atari XE Game System, Nintendo and Sega: A Comparison Review

8-Bit: Dungeon Creation Set, Big Letters Editor, Scrolling Text Windows

ST: Return of BASIC Game Wizards Pratt & Everman, Timeworks "Sidekick" Review

Low-Cost Printers from Panasonic and Okidata

Super Disk Bonus for both 8-Bit & ST

\$5.95

All this software without typing—yours for only \$5.95. Your double-sided Antic Monthly Disk has every type-in program from this issue, plus this month's Super Disk Bonus and other extras. Shipment within 24 hours is guaranteed when you phone your MasterCard or Visa order to the Disk Desk: (800) 234-7001. Now Toll-Free!

SOFTWARE LIBRARY

► FRACTAL "ARROWHEAD" POWER DISPLAY	
SIERPINSKI CURVES	65
► ATARI MOVIEMAKING HAS NEVER BEEN EASIER	
MEGANIMATOR	66
► GAME OF THE MONTH	
CURRENT EVENTS	69
► 40% FASTER BASIC FOR YOU	
FAST-STACK AND FAST-JUMP	71
► BONUS GAME	
KILLER CHESS	73

ST RESOURCE

► SIX SHORT ST STUNNERS	
GOT-A-MINUTE GRAPHICS	75

TYPING SPECIAL ATARI CHARACTERS	64
HOW TO USE TYPO II	65

DISK SUBSCRIBERS: Programs for 8-bit Atari computers can be used immediately. Just follow instructions in the accompanying magazine articles. ST Owners: See monthly disk's ST Help File for instructions on how to transfer programs to 3-1/2 inch disk.

DOS COMPATIBILITY: All 8-bit programs published by **Antic** are tested to work with Atari Disk Operating System (DOS) 2.0S and 2.5—not with the incompatible DOS 3.0. DOS 2.0S is available on each Antic Monthly Disk. Copy the DOS.SYS and DUP.SYS files.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the publisher.

TYPPING SPECIAL ATARI CHARACTERS

Antic printed program listings leave a small space between each Atari Special Character for easier reading. Immediately below you will see the way **Antic** prints all the standard Atari letters and numbers, in upper and lower case, in normal and inverse video.

```
ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopqrstuvwxyz
0123456789
```

The Atari Special Characters and the keys you must type in order to get them are shown in the two boxes below.

NORMAL VIDEO				INVERSE VIDEO			
FOR THIS	TYPE THIS	FOR THIS	TYPE THIS	FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
█ CTRL ,	█ CTRL S	█ CTRL A	█ CTRL T	█ CTRL ,	█ CTRL X	█ CTRL Y	█ CTRL Z
█ CTRL A	█ CTRL T	█ CTRL B	█ CTRL U	█ CTRL A	█ ESC	█ CTRL Z	█ SHIFT DELETE
█ CTRL B	█ CTRL U	█ CTRL C	█ CTRL V	█ CTRL B	█ ESC	█ SHIFT INSERT	█ CTRL TAB
█ CTRL C	█ CTRL V	█ CTRL D	█ CTRL W	█ CTRL C	█ ESC	█ CTRL TAB	█ SHIFT TAB
█ CTRL D	█ CTRL W	█ CTRL E	█ CTRL X	█ CTRL D	█ ESC	█ CTRL .	█ CTRL ;
█ CTRL E	█ CTRL X	█ CTRL F	█ CTRL Y	█ CTRL E	█ ESC	█ SHIFT =	█ SHIFT =
█ CTRL F	█ CTRL Y	█ CTRL G	█ CTRL Z	█ CTRL F	█ ESC	█ CTRL 2	█ ESC CTRL 2
█ CTRL G	█ CTRL Z	█ CTRL H	█ ESC ESC	█ CTRL G	█ ESC	█ CTRL -	█ CTRL DELETE
█ CTRL H	█ ESC ESC	█ CTRL I	█ ESC CTRL -	█ CTRL H	█ ESC	█ CTRL /	█ ESC CTRL /
█ CTRL I	█ ESC CTRL -	█ CTRL J	█ ESC CTRL =	█ CTRL I	█ ESC	█ CTRL ;	█ ESC CTRL ;
█ CTRL J	█ ESC CTRL =	█ CTRL K	█ ESC CTRL +	█ CTRL J	█ ESC	█ SHIFT =	█ ESC SHIFT =
█ CTRL K	█ ESC CTRL +	█ CTRL L	█ ESC CTRL *	█ CTRL K	█ ESC	█ CTRL -	█ ESC CTRL -
█ CTRL L	█ ESC CTRL *	█ CTRL M	█ CTRL .	█ CTRL L	█ ESC	█ CTRL /	█ ESC CTRL /
█ CTRL M	█ CTRL .	█ CTRL N	█ CTRL ;	█ CTRL M	█ ESC	█ CTRL ;	█ ESC CTRL ;
█ CTRL N	█ CTRL ;	█ CTRL O	█ SHIFT =	█ CTRL N	█ ESC	█ SHIFT -	█ ESC SHIFT -
█ CTRL O	█ SHIFT =	█ CTRL P	█ ESC SHIFT CLEAR	█ CTRL O	█ ESC	█ SHIFT -	█ ESC SHIFT -
█ CTRL P	█ ESC SHIFT CLEAR	█ CTRL Q	█ ESC DELETE	█ CTRL P	█ ESC	█ CTRL -	█ ESC CTRL -
█ CTRL Q	█ ESC DELETE	█ CTRL R	█ ESC TAB	█ CTRL Q	█ ESC	█ CTRL /	█ ESC CTRL /
█ CTRL R	█ ESC TAB			█ CTRL R	█ ESC	█ CTRL ;	█ ESC CTRL ;
				█ CTRL S	█ ESC	█ SHIFT =	█ ESC SHIFT =
				█ CTRL T	█ ESC	█ CTRL -	█ ESC CTRL -
				█ CTRL U	█ ESC	█ CTRL /	█ ESC CTRL /
				█ CTRL V	█ ESC	█ CTRL ;	█ ESC CTRL ;
				█ CTRL W	█ ESC	█ SHIFT -	█ ESC SHIFT -

Whenever the CONTROL key (CTRL on the 400/800) or SHIFT key is used, *bold it down* while you press the next key. Whenever the ESC key is pressed, *release* it before you type the next key.

Turn on inverse video by pressing the Reverse Video Mode Key █ . Turn it off by pressing it a second time. (On the 400/800, use the Atari Logo Key █ instead.)

Among the most common program typing mistakes are switching certain capital letters with their lower-case counterparts—you need to look especially carefully at P, X, O and 0 (zero).

Some of Atari Special Characters are not easy to tell apart from standard alpha-numeric characters. Usually the Special Characters will be boxed. Compare the two sets of characters below:

SPECIAL	STANDARD
█	█ CTRL F
█	█ CTRL G
█	█ CTRL N
█	█ CTRL R
█	█ CTRL S
█	█ /
█	█ SHIFT +
█	█ SHIFT -
█	█ -
█	█ +

HOW TO USE TYPO II (8-BIT)

TYPO II automatically proofreads Antic's type-in BASIC listings for 8-bit Atari computers. It finds the exact line where you made a program typing mistake.

Type in TYPO II and SAVE a copy to disk or cassette. Now type GOTO 32000. When you see the instruction on the screen, type in a single program line **without the two-letter TYPO II code** at the left of the line number. Press the [RETURN] key.

Your line will reappear at the bottom of the screen with a two-letter TYPO II code on the left. If this code is not exactly the same as the line code printed in the magazine, you mistyped something in that line.

To call back any line previously typed, type an asterisk [*] followed (without in-between spaces) by the line number, then press [RETURN]. When the complete line appears at the top of the screen, press [RETURN] again. This is also the way you use TYPO II to proofread itself.

To LIST your program, press [BREAK] and type LIST. To return to TYPO II, type GOTO 32000.

To remove TYPO II from your program, type LIST "D:FILENAME",0,31999 [RETURN] (Cassette owners LIST "C:"). Type NEW, then ENTER "D:FILENAME" [RETURN] (Cassette—ENTER "C:"). Your program is now in memory without TYPO II and you can SAVE or LIST it to disk or cassette.



Don't type the
TYPO II Codes!

```
WB 32000 REM TYPO II BY ANDY BARTON
VM 32010 REM VER. 1.0 FOR ANTIC MAGAZINE
HS 32020 CLR :DIM LINE$(120):CLOSE #2:CLS
SE #3
BN 32030 OPEN #2,4,0,"E":OPEN #3,5,0,"E"
YC 32040 ? "K":POSITION 11,1:?"TYPOII"
EM 32050 TRAP 32040:POSITION 2,3:?"Type
in a program line"
HS 32060 POSITION 1,4:?"":INPUT #2:LINE
$:IF LINE$="" THEN POSITION 2,4:LIST B
:GOTO 32060
XH 32070 IF LINE$(1,1)="*" THEN B=VAL(LIN
E$(2,LEN(LINE$))):POSITION 2,4:LIST B:
GOTO 32060
TH 32080 POSITION 2,10:?"CONT"
MF 32090 B=VAL(LINE$):POSITION 1,3:?"";
```

```
NY 32100 POKE 842,13:STOP
CN 32110 POKE 842,12
ET 32120 ? "K":POSITION 11,1:?"TYPOII"
":POSITION 2,15:LIST B
CE 32130 C=0:ANS=C
DR 32140 POSITION 2,16:INPUT #3:LINE$:IF
LINE$="" THEN ? "LINE ";B;" DELETED":G
OTO 32050
UU 32150 FOR D=1 TO LEN(LINE$):C=C+1:ANS=
ANS+CC*ASC(LINE$(D,D)):NEXT D
WJ 32160 CODE=INT(ANS/676)
JW 32170 CODE=ANS-(CODE*676)
EH 32180 HCODE=INT(CODE/26)
BH 32190 LCODE=CODE-(HCODE*26)+65
HB 32200 HCODE=HCODE+65
IE 32210 POSITION 0,16:?"CHR$(HCODE):CHR$(
LCODE)
UG 32220 POSITION 2,13:?"If CODE does no
t Match press RETURN and edit line a
bove.":GOTO 32050
```

fractal "arrowhead" power display

SIERPINSKI CURVES

Article on page 19

LISTING 1

Don't type the
TYPO II Codes!

```
AE 4 REM SIERPINSKI CURVES
KR 8 REM BY ALLAN SHARPE
ZO 11 REM FROM PAGE 6 MAGAZINE
RI 15 DIM ST(5):F=0
TU 45 GRAPHICS 7+16:POKE 708,56
JO 50 FOR Z=1 TO 4
DL 55 C=C+1:IF C>3 THEN C=1
GH 56 COLOR C
HL 57 IF F=1 THEN COLOR 0
OK 61 GOSUB 100
OU 62 NEXT Z
JO 70 IF F=0 THEN COLOR 0:F=1:GOTO 50
YX 90 END
CG 100 H=96:H=H/4:X=3.3*X:H=Y=3*X:I=0
XE 110 I=I+1:X=X-H:H=H/2:Y=Y+H
ZG 120 IF I<Z THEN GOTO 110
NE 130 PS=I:GOSUB 600
OX 140 GOSUB 200:A=H:B=-H:GOSUB 800
FH 150 GOSUB 300:A=-H:B=-H:GOSUB 800
SW 160 GOSUB 400:A=-H:B=H:GOSUB 800
FF 170 GOSUB 500:A=H:B=H:GOSUB 800
KI 180 GOSUB 700:RETURN
PE 200 IF TP<=0 THEN RETURN
YG 220 PS=TP-1:GOSUB 600
OH 230 GOSUB 200:A=H:B=-H:GOSUB 800
UE 240 GOSUB 300:A=2*X:B=0:GOSUB 800
FC 250 GOSUB 500:A=H:B=H:GOSUB 800
```

```
RK 260 GOSUB 200
KH 270 GOSUB 700:RETURN
PF 300 IF TP<=0 THEN RETURN
YH 320 PS=TP-1:GOSUB 600
FF 330 GOSUB 300:A=-H:B=-H:GOSUB 800
DH 340 GOSUB 400:A=0:B=-2*X:H:GOSUB 800
PB 350 GOSUB 200:A=H:B=-H:GOSUB 800
RW 360 GOSUB 300
KI 370 GOSUB 700:RETURN
PG 400 IF TP<=0 THEN RETURN
YI 420 PS=TP-1:GOSUB 600
ST 430 GOSUB 400:A=-H:B=H:GOSUB 800
FH 440 GOSUB 500:A=-2*X:B=0:GOSUB 800
FK 450 GOSUB 300:A=-H:B=-H:GOSUB 800
SI 460 GOSUB 400
KJ 470 GOSUB 700:RETURN
PH 500 IF TP<=0 THEN RETURN
YJ 520 PS=TP-1:GOSUB 600
FB 530 GOSUB 500:A=H:B=H:GOSUB 800
NU 540 GOSUB 200:A=0:B=2*X:H:GOSUB 800
SY 550 GOSUB 400:A=-H:B=H:GOSUB 800
SU 560 GOSUB 500
KK 570 GOSUB 700:RETURN
BO 600 SP=SP+1:ST(5P)=PS:TP=PS:RETURN
MR 700 SP=SP-1:TP=ST(5P):RETURN
RZ 800 PLOT X,Y:DRAWTO X+A,Y+B
UU 820 X=X+A:Y=Y+B:RETURN
```

atari moviemaking was never easier

MEGANIMATOR

Article on page 33

LISTING 1

Don't type the
TYPO II Codes!

```

UY 10 REM MEG-ANIMATOR, LISTING ONE
GU 11 REM BLKED.BAS
ZI 20 REM BY JACOB DONHAM
PT 30 REM ©1987, ANTIC PUBLISHING
EU 50 POKE 106,152:PM=152:CH=156:GRAPHICS
  0:POKE 710,0:POKE 752,1:PMB=PM*256:CH
  =CH*256
OK 60 A=PEEK(89):B=PEEK(88):POKE 88,0:FOR
  I=152 TO 160:POKE 89,I:?"":NEXT I:P
  OKE 89,A:POKE 88,B
BF 70 DIM BT(8),PW(7),PL(7),A$(17),F$(8),
  FN$(15):FOR I=0 TO 7:READ A:PW(I)=A:NE
  XT I:DATA 1,2,4,8,16,32,64,128
NE 80 GOSUB 3000
CL 90 OPEN #3,4,0,"K:"
UN 100 ? " █ BLOCK EDITOR... "
CT 105 ? "
ZZ 110 ? " █ Edit Block Set"
UC 120 ? " █ Load Block Set"
HP 130 ? " █ Save Block Set"
YN 140 ? " █ Quit"
SL 150 GET #3,K:TRAP 210
DB 160 IF K=ASC("1") THEN 1000
EQ 170 IF K=ASC("2") THEN 2000
KC 180 IF K=ASC("3") THEN 2500
WU 190 IF K=ASC("4") THEN RUN "D:MEGMATOR
  .BAS"
NK 200 GOTO 150
UX 210 POSITION 12,7:PRINT " █ DISK ERROR!
  "
KJ 220 GET #3,K:POSITION 12,7:?
  :"GOTO 150"
SD 1000 ? "█:GOSUB 3050:DL=PEEK(568)+256
  *PEEK(561):POKE DL+27,65:POKE DL+28,32
  :POKE DL+29,156
UZ 1001 POKE DL+3,71:POKE DL+6,7:POKE DL+
  7,7:POKE DL+8,135
TU 1005 POKE 756,CH:POKE 53277,3
HK 1010 POKE 54286,192:DM=PEEK(DL+4)+256*
  PEEK(DL+5):FOR I=0 TO 3:FOR J=0 TO 15:
  POKE DM+(I*203+J+2,I*16+J:NEXT J
WW 1020 NEXT I:ZM=DM+88:ZMH=INT(ZM/256):Z
  ML=ZM-256*ZMH:POKE 88,ZML:POKE 89,ZMH
HO 1025 ? #6;" █ooooooooooooo"
UY 1030 ? #6;" █ █ Edit Bloc
  k"
OU 1040 ? #6;" █ █ █ Clear Blo
  ck"
YM 1050 ? #6;" █ █ █ Reverse B
  lock"
TC 1060 ? #6;" █ █ █ Scroll Up
  "
GZ 1070 ? #6;" █ █ █ Scroll Do
  wn"
OI 1080 ? #6;" █ █ █ Scroll Ri
  ght"
PW 1090 ? #6;" █ █ █ Scroll Le
  ft"
XT 1100 ? #6;" █ █ █ Return"
JU 1110 ? #6;" █ooooooooooooo"
HS 1120 GET #3,K
XW 1130 IF K>56 OR K<49 THEN 1120
US 1140 ON K-48 GOTO 1200,1700,1750,1800,
  1850,1900,1950,1390
NM 1150 ON K-48 GOTO 1200,1700,1750,1800,
  1850,1900,1950
SY 1200 X=64:Y=16:CHR=0:OY=16:POKE 53277,
  3
ED 1210 POKE 53248,X:IF Y>OY THEN FOR I=
  OY TO OY+7:POKE P0+I,0:NEXT I
LU 1220 FOR I=Y TO Y+7:POKE P0+I,PL(I-Y):
  NEXT I
PK 1230 OY=Y:ST=STICK(0):IF ST=14 AND Y>2
  3 THEN Y=Y-8:CHR=CHR-16
SA 1240 IF ST=13 AND Y<33 THEN Y=Y+8:CHR=
  CHR+16
JM 1250 IF ST=11 AND X>71 THEN X=X-8:CHR=
  CHR-1
HD 1260 IF ST=7 AND X<177 THEN X=X+8:CHR=
  CHR+1

```

```

DD 1270 IF STRIG(0)=1 THEN 1210
IR 1275 FOR I=OY TO OY+7:POKE P0+I,0:NEXT
  I
FO 1280 POKE 53249,68:FOR I=8 TO 7:FOR J=
  0 TO 3:POKE P1+56+(I*4)+J,PEEK(CHB+C
  H R*8)+I:J:NEXT J:NEXT I
KN 1290 X=5:Y=2:OX=5:OY=2
HZ 1300 IF OX<>X OR OY<>Y THEN POSITION O
  X,OY:?" "
MU 1305 POSITION X,Y:?" ":"FOR I=0 TO 6:N
  EXT I
BQ 1310 OX=X:OY=Y:ST=STICK(0):IF ST=14 AN
  D Y>2 THEN Y=Y-1
HU 1320 IF ST=13 AND Y<9 THEN Y=Y+1
EQ 1330 IF ST=11 AND X>5 THEN X=X-1
YC 1340 IF ST=7 AND X<12 THEN X=X+1
TE 1350 IF PEEK(764)>255 THEN POSITION X
  ,Y:?" ":"GOTO 1120
DB 1360 IF STRIG(0)=1 THEN 1300
HY 1370 IN=PEEK(CHB+(CHR*8)+(Y-2)):BT=X-4
  :GOSUB 1650:POKE CHB+(CHR*8)+(Y-2),0T:
  FOR I=0 TO 3
DZ 1380 POKE P1+60+(CY-3)*4+I,0T:NEXT I:
  GOTO 1300
MI 1390 GRAPHICS 0:POKE 752,1:POKE 710,0:
  POKE 53248,0:POKE 53249,0:GOTO 100
NG 1450 FOR I=1 TO 8:BT(I)=0:NEXT I
FH 1462 A=IN:FOR I=1 TO 8:M=8-I:N=PW(M):I
  F A>N-1 THEN BT(I)=1:A=A-N
GC 1463 NEXT I
HM 1464 IF BT(BT)=1 THEN BT(BT)=0:GOTO 16
  58
IS 1465 IF BT(BT)=0 THEN BT(BT)=1
UK 1468 FOR I=1 TO 8:M=8-I:N=PW(M):A=A+BT
  (I)*N:NEXT I:0T=A:RETURN
JO 1470 FOR I=0 TO 7:POKE CHB+(CHR*8)+I,0
  :NEXT I:GOTO 1280
SO 1475 FOR I=0 TO 7:POKE CHB+(CHR*8)+I,2
  55-PEEK(CHB+(CHR*8)+I):NEXT I:GOTO 128
  0
RB 1480 FOR I=0 TO 6:POKE CHB+(CHR*8)+I,P
  EEK(CHB+(CHR*8)+I)+1:NEXT I:POKE CHB+(C
  HR*8)+7,0:GOTO 1280
BK 1485 FOR I=7 TO 8 STEP -1:POKE CHB+(CH
  R*8)+I,PEEK(CHB+(CHR*8)+I-1):NEXT I:PO
  KE CHB+(CHR*8),0:GOTO 1280
LL 1490 FOR I=0 TO 7:POKE CHB+(CHR*8)+I,I
  NT(PEEK(CHB+(CHR*8)+I)/2):NEXT I:GOTO
  1280
IW 1495 FOR I=0 TO 7:J=PEEK(CHB+(CHR*8)+I
  )*2:IF J>255 THEN J=J-255
ZN 1500 POKE CHB+(CHR*8)+I,J:NEXT I:GOTO
  1280
UK 1500 ? "█":? :? :? :" █ Direct
  ogy":? :" █ Load Block Set":?
  :" █ Return"
HO 2010 GET #3,K
QB 2020 IF K=ASC("1") THEN GOSUB 2060:GOT
  O 2000
LO 2030 IF K=ASC("2") THEN 2100
OF 2040 IF K=ASC("3") THEN ? "█":GOTO 100
OC 2050 GOTO 2010
LC 2060 ? "█":? :" █ Directory
  ":"OPEN #2,6,0,"D:*..SET":TRAP 2080
LH 2070 INPUT #2,A$=? :" :"A$":GOT
  O 2070
RH 2080 CLOSE #2:GET #3,K:RETURN
CF 2100 F$=" "FN$="D":TRAP 2110
DQ 2110 ? "█":? :? :? :" File to Lo
  ad":INPUT F$:FN$(3,LEN(F$)+2)=F$:FN$(C
  LEN(F$)+3,LEN(F$)+6)=".SET"
JO 2120 TRAP 2140:OPEN #1,4,0,FN$:POKE 85
  2,0:POKE 853,CH:POKE 856,0:POKE 857,2:
  POKE 850,7
PJ 2130 A=USR(ADR("hhhMLV"),16):CLOSE #1
  :GOSUB 3000:GOTO 2000
HC 2140 CLOSE #1:?" :" Disk Error
  :"PEEK(195):GET #3,K:GOSUB 3000:GOTO
  2000
FA 2500 ? "█":? :? :? :" █ Direct

```

```

        █ Save Block Set":?
"
HY 2510 GET #3,K
YN 2520 IF K=ASC("1") THEN GOSUB 2060:GOT
0 2500
QY 2530 IF K=ASC("2") THEN 2600
QP 2540 IF K=ASC("3") THEN ? "█":GOTO 100
QU 2550 GOTO 2510
JI 2600 F$=""      "FN$=""D"":TRAP 2610
AO 2610 ? "█":? :? :? "      File to Sa
ue": INPUT F$:FN$(3,LEN(F$)+2)=F$:FN$(C
LEN(F$)+3,LEN(F$)+6)="SET"
EB 2620 TRAP 2640:OPEN #1,8,0,FN$:POKE 85
2,0:POKE 853,CH:POKE 856,0:POKE 857,2:
POKE 850,11
AS 2630 A=USR(ADDR("HHLMLVUD"),16):CLOSE #1
:GOSUB 3000:GOTO 2500
WR 2640 CLOSE #1:?"      Disk Error
- ";PEEK(195):GET #3,K:GOSUB 3000:GOTO
2500
HR 2999 END
LT 3000 RESTORE 3015
ZN 3010 FOR I=0 TO 10:READ J:POKE 1536+I,
J:NEXT I:POKE 512,0:POKE 513,6
TT 3015 DATA 72,169,224,141,10,212,141,9,
212,104,64
RH 3020 RETURN
AF 3050 POKE 54279,PM:POKE 559,46:POKE 53
256,0:POKE 53257,3:POKE 53258,1:POKE 7
04,26:POKE 785,20:POKE 786,0
FJ 3060 POKE 787,0:POKE 53259,1:P0=PMB+51
2:P1=PMB+640:P2=PMB+768:P3=PMB+896:POK
E 53277,0
JQ 3080 RESTORE 3085:FOR I=0 TO 7:READ J:
PL(I)=J:NEXT I
DJ 3085 DATA 255,129,129,129,129,129,129,
255
BC 3090 RETURN

```

LISTING 2

```

XT 10 REM MEG-ANIMATOR, LISTING TWO
KW 11 REM FRMED.BAS
ZI 20 REM BY JACOB DONHAM
PT 30 REM (c) 1987, ANTIC PUBLISHING
PN 50 POKE 106,88:PM=88:CH=92:SB=96:GRAPH
ICS 0:POKE 710,0:POKE 752,1:PMB=PM*256
:CHB=CH*256
KK 60 A=PEEK(89):B=PEEK(88):POKE 88,0:FOR
I=88 TO 160:POKE 89,I:? "█":NEXT I:PO
KE 89,A:POKE 88,B
DD 70 DIM PL(7),CT(19,11),A$(17),F$(8),FN
$15
EW 75 FOR I=96 TO 160:X=I*256+244:POKE X+
5,10:NEXT I
NE 80 GOSUB 3000
CL 90 OPEN #3,4,0,"K:"
UX 100 ? "      █ Frame Editor █"
CT 105 ?
GS 110 ? "      █ Edit Frames"
AU 120 ? "      █ Load Frames"
DI 130 ? "      █ Save Frames"
VQ 140 ? "      █ Load Block Set"
ZU 145 ? "      █ Quit"
HL 150 GET #3,K
DB 160 IF K=ASC("1") THEN 1000
JL 170 IF K=ASC("2") THEN 2500
MZ 180 IF K=ASC("3") THEN 2800
GL 185 IF K=ASC("4") THEN 2000
XJ 190 IF K=ASC("5") THEN RUN "D:MEGMATOR
.BAS"
HK 200 GOTO 150
TP 210 POSITION 12,7:?"      █ Disk Error? █"
KJ 220 GET #3,K:POSITION 12,7:?"      ;:GOTO 150
SD 1000 ? "█":GOSUB 3050:DL=PEEK(560)+256
*PEEK(S61):POKE DL+27,65:POKE DL+28,32
:POKE DL+29,156
UZ 1001 POKE DL+3,71:POKE DL+6,7:POKE DL+
7,7:POKE DL+8,135
TU 1005 POKE 756,CH:POKE 53277,3
HK 1010 POKE 54286,192:DM=PEEK(DL+4)+256*
PEEK(DL+5):FOR I=0 TO 3:FOR J=0 TO 15:
POKE DM+(I*20)+J+2,I*16+J:NEXT J
WW 1020 NEXT I:ZM=DM+80:ZMH=INT(ZM/256):Z
ML=ZM-256*ZMH:POKE 88,ZML:POKE 89,ZMH
HX 1030 ? #6;"      █ Change Frame"
IW 1048 ? #6;"      █ Frame      █ Clear Frame"
KI 1050 ? #6;"      █ Color"
PI 1060 ? #6;"      ;:SC,"      █ Copy From"
GP 1070 ? #6;"      ;:CL,"      █ Parameters"
AI 1075 ? #6;"      █ Return"

```

```

OK 1080 GOTO 1200
HS 1120 GET #3,K
UU 1130 IF K>54 OR K<49 THEN 1200
SI 1140 ON K-48 GOTO 1510,1530,1540,1600,
1700,1390
SY 1200 X=64:Y=16:CHR=0:OY=16:POKE 53277,
3
ED 1210 POKE 53248,X:IF Y>OY THEN FOR I=
OY TO OY+7:POKE P0+I,0:NEXT I
LU 1220 FOR I=Y TO Y+7:POKE P0+I,PL(I-Y):
NEXT I
PK 1230 OY=Y:ST=STICK(0):IF ST=14 AND Y>2
3 THEN Y=Y-8:CHR=CHR-16
SA 1240 IF ST=13 AND Y<33 THEN Y=Y+8:CHR=
CHR+16
JM 1250 IF ST=11 AND X>71 THEN X=X-8:CHR=
CHR-1
HD 1260 IF ST=7 AND X<177 THEN X=X+8:CHR=
CHR+1
GM 1265 IF PEEK(764)<>255 THEN FOR I=Y TO
Y+7:POKE P0+I,0:NEXT I:GOTO 1120
DD 1270 IF STRIG(0)=1 THEN 1210
IR 1275 FOR I=OY TO OY+7:POKE P0+I,0:NEXT
I
CU 1290 GRAPHICS 18:GOSUB 3050:POKE 756,C
H:POKE 53277,3:POKE 53249,0:POKE 53250
,0:POKE 53251,0
PH 1293 POKE 88,0:POKE 89,SB+SC:DL=PEEK(5
60)+256*PEEK(561):POKE DL+4,0:POKE DL+
5,SB+SC
FM 1295 X=48:Y=16:B=0:OY=16
DB 1300 IF OY>Y THEN FOR I=OY TO OY+7:PO
KE P0+I,0:NEXT I
IY 1305 POKE 53248,X:FOR I=Y TO Y+7:POKE
P0+I,PL(I-Y):NEXT I
LS 1310 OY=Y:ST=STICK(0):IF ST=14 AND Y>2
3 THEN Y=Y-8:B=B-20
UV 1320 IF ST=13 AND Y<97 THEN Y=Y+8:B=B+
20
VO 1330 IF ST=11 AND X>55 THEN X=X-8:B=B-
1
PZ 1340 IF ST=7 AND X<193 THEN X=X+8:B=B+
1
DA 1350 IF PEEK(764)<>255 THEN GET #3,K:G
OTO 1400
DB 1360 IF STRIG(0)=1 THEN 1300
WH 1370 POKE (SC+SB)*256+B,CHR+C:GOTO 130
0
MM 1390 GRAPHICS 0:POKE 752,1:POKE 710,0:
POKE 53248,0:GOTO 100
TF 1400 GRAPHICS 0:POKE 752,1:POKE 710,0:
FOR I=Y TO Y+7:POKE P0+I,0:NEXT I:GOTO
1000
EZ 1510 GRAPHICS 0:POKE 752,1:POKE 710,0:
POKE 53248,0
NQ 1520 ? "█":? :? :? "      Which Fram
e":;TRAP 1000:INPUT S:IF S>-1 AND S<64
THEN SC=S:GOTO 1000
LZ 1530 GRAPHICS 18:POKE 88,0:POKE 89,SB+
SC:PRINT #6;"█":GOTO 1290
UM 1540 GRAPHICS 0:POKE 53277,0:POKE 752,
1:POKE 710,0:?" :? :? "      Which Co
lor":;TRAP 1000:INPUT C
XS 1550 IF C<1 OR C>4 THEN 1540
NJ 1560 C=(C-1)*64:GOTO 1000
DL 1600 GRAPHICS 0:POKE 752,1:POKE 710,0:
POKE 53248,0:?" :? :? "      Frame
to Copy From":;TRAP 1000
TY 1605 INPUT S
TT 1610 IF S>-1 AND S<64 THEN ? :? "
Copying Frame ";S;" to Frame ";SC
MA 1620 FOR I=0 TO 239:POKE (SB+SC)*256+I
,PEEK((SB+S)*256+I):NEXT I:GOTO 1000
FA 1700 GRAPHICS 0:POKE 752,1:POKE 710,0:
POKE 53248,0
GU 1710 ? :? :? "      █ Sound"
QT 1730 ? "      █ Block Set"
YR 1740 ? "      █ Delay"
KY 1750 ? "      █ Return"
IQ 1760 GET #3,K
UA 1770 IF K=ASC("1") THEN 1820
BC 1780 IF K=ASC("2") THEN 1880
TL 1800 IF K=ASC("3") THEN 1900
LE 1810 IF K=ASC("4") THEN 1800
UH 1815 GOTO 1760
WF 1820 ? "█":? :FOR I=0 TO 3
QY 1825 ? "      Tone For Voice ";I+1:;
TRAP 1825:INPUT TN:IF TN<0 OR TN>255 T
HEN 1825
FH 1830 POKE (SB+SC)*256+240+I,TN:NEXT I:
GOTO 1700
WQ 1850 ? "█":? :FOR I=0 TO 3
DD 1855 ? "      Color ";I+1:;TRAP 1855
:INPUT CL:IF CL<0 OR CL>255 THEN 1855
DF 1860 POKE (SB+SC)*256+244+I,CL:NEXT I:

```

continued on next page

```

GOTO 1700
NU 1880 ? "":?
MB 1885 ? " Block Set";:TRAP 1885:
INPUT BS:IF BS<1 OR BS>8 THEN 1885
NA 1890 POKE (SB+SC)*256+248,BS-1:GOTO 17
BB
MY 1900 ? "":?
CN 1915 ? " Delay";:TRAP 1915:INPU
T DL:IF DL<0 OR DL>255 THEN 1915
KR 1920 POKE (SB+SC)*256+249,DL:GOTO 1700
HQ 1999 END
UK 2000 ? "":? :? :? " Direct
ory";? " Load Block Set";?
" Return"
HO 2010 GET #3,K
QB 2020 IF K=ASC("1") THEN GOSUB 2060:GOT
O 2000
LO 2030 IF K=ASC("2") THEN 2100
QF 2040 IF K=ASC("3") THEN ? "":GOTO 100
OC 2050 GOTO 2010
LC 2060 ? "":? " Directory"
"OPEN #2,6,0,"D":SET":TRAP 2080
LH 2070 INPUT #2,A$:? " ";A$:GOT
O 2070
AH 2080 CLOSE #2:GET #3,K:RETURN
ZT 2100 F$="":FN$="D":GOSUB 3100
:TRAP 2110
DQ 2110 ? "":? :? :? " File to Lo
ad";:INPUT F$=FN$(3,LEN(F$)+2)=F$=FN$(C
LEN(F$)+3,LEN(F$)+6)="SET"
KJ 2120 TRAP 2140:OPEN #1,4,0,FN$=POKE 85
2,0:POKE 853,CH:POKE 856,0:POKE 857,2:
POKE 859,7:A=USR(1536,16)
KW 2130 CLOSE #1:GOSUB 3000:GOTO 2000
HC 2140 CLOSE #1:?:? " Disk Error
- ";PEEK(195):GET #3,K:GOSUB 3000:GOTO
2000
KK 2500 ? "":? :? :? " Direct
ory";? " Load Frames";? "
" Return"
HY 2510 GET #3,K
ER 2520 IF K=ASC("1") THEN GOSUB 2560:GOT
O 2500
QY 2530 IF K=ASC("2") THEN 2600
RH 2540 IF K=ASC("3") THEN ? CHR$(125):GOT
O 100
QU 2550 GOTO 2510
GJ 2560 ? CHR$(125):? " DATA
Category":OPEN #2,6,0,"D":FRM":TRAP
2580
LR 2570 INPUT #2,A$:? " ";A$:GOT
O 2070
AR 2580 CLOSE #2:GET #3,K:RETURN
IZ 2600 F$="":FN$="D":GOSUB 3100
:TRAP 2610
OU 2610 ? CHR$(125):? :? :? " File
to Load";:INPUT F$=FN$(3,LEN(F$)+2)=F
$=FN$(LEN(F$)+3,LEN(F$)+6)="FRM"
UT 2620 TRAP 2640:OPEN #1,4,0,FN$=POKE 85
2,0:POKE 853,SB:POKE 856,0:POKE 857,64
:POKE 859,7:A=USR(1536,16)
RK 2630 CLOSE #1:GOSUB 3000:GOTO 2500
WR 2640 CLOSE #1:?:? " Disk Error
- ";PEEK(195):GET #3,K:GOSUB 3000:GOTO
2500
PP 2800 ? CHR$(125):? :? :? " Direct
ory";? " Save Frames"
"?:? " Return"
IE 2810 GET #3,K
JT 2820 IF K=ASC("1") THEN GOSUB 2560:GOT
O 2800
UE 2830 IF K=ASC("2") THEN 2900
RN 2840 IF K=ASC("3") THEN ? CHR$(125):GOT
O 100
SK 2850 GOTO 2810
DN 2900 F$="":FN$="D":GOSUB 3100
:TRAP 2910
PA 2910 ? CHR$(125):? :? :? " File
to Save";:INPUT F$=FN$(3,LEN(F$)+2)=F
$=FN$(LEN(F$)+3,LEN(F$)+6)="FRM"
XG 2920 TRAP 2940:OPEN #1,8,0,FN$=POKE 85
2,0:POKE 853,SB:POKE 856,0:POKE 857,64
:POKE 859,11:A=USR(1536,16)
VI 2930 CLOSE #1:GOSUB 3000:GOTO 2800
GA 2940 CLOSE #1:?:? " Disk Error
- ";PEEK(195):GET #3,K:GOSUB 3000:GOTO
2800
HR 2999 END
LT 3000 RESTORE 3015
ZN 3010 FOR I=0 TO 10:READ J:POKE 1536+I,
J:NEXT I:POKE 512,0:POKE 513,6
FP 3015 DATA 72,169,224,141,10,212,141,9,
212,104,64,8,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
AH 3020 RETURN
AF 3050 POKE 54279,PM:POKE 559,46:POKE 53

```

```

256,0:POKE 53257,3:POKE 53258,1:POKE 7
04,26:POKE 705,20:POKE 706,0
3060 POKE 707,0:POKE 53259,1:P0=PMB+51
2:P1=PMB+648:P2=PMB+768:P3=PMB+896:POK
E 53277,0
JQ 3080 RESTORE 3085:FOR I=0 TO 7:READ J:
PL(I)=J:NEXT I
OJ 3085 DATA 255,129,129,129,129,129,129,
255
BC 3090 RETURN
MK 3100 RESTORE 3115
EX 3110 FOR I=0 TO 6:READ J:POKE 1536+I,J
:NEXT I
AJ 3115 DATA 104,104,104,178,76,86,228
AJ 3120 RETURN

```

LISTING 3

```

FJ 10 REM MEG-ANIMATOR, LISTING THREE
PL 11 REM MOVED.BAS
ZI 20 REM BY JACOB DONHAM
PT 30 REM (c)1987, ANTIC PUBLISHING
UN 90 GRAPHICS 0:POKE 752,1:POKE 710,0:OP
EN #3,4,0,"K":DIM F$(8),FN$(14),TS$(40
),
MC 100 ? " Movie Editor"
CT 105 ?
CE 110 ? " Create Movie"
HZ 120 ? " Quit"
WE 130 GET #3,K:TRAP 170
CX 140 IF K=ASC("1") THEN 1000
VI 150 IF K=ASC("2") THEN RUN "D:MEGMATOR
.BAS"
MZ 160 GOTO 130
GU 170 POSITION 2,5:?" Disk E
rror":GET #3,K:POSITION 2,5:?" "
":GOTO 130
MG 1800 ? "":?
TJ 1810 ? " Movie Filename":TRAP 10
:INPUT F$=FN$="D":FN$(3,3+LEN(F$))=
F$(1,LEN(F$))
BG 1820 FN$(3+LEN(F$),6+LEN(F$))=".MOV":T
RAP 2000:OPEN #2,8,0,FN$
DN 1825 ? " Title":TRAP 1135:INPUT
T$:TRAP 2000:? #2:T$
UM 1830 ? " How Many Block Sets":TR
AP 1830:INPUT BS:IF BS<1 OR BS>8 THEN
1830
GI 1840 TRAP 2000:? #2:BS:FOR I=1 TO BS
TQ 1850 ? " Filename For Set ";I:TR
AP 1850:INPUT FR:IF FR<1 OR FR>104 THEN 18
00
BL 1860 FN$(3+LEN(F$),6+LEN(F$))=".SET":T
RAP 2000:? #2:FN$
FK 1870 NEXT I
MR 1880 ? " How Many Frames":TRAP 1
080:INPUT FR:IF FR<1 OR FR>104 THEN 18
00
ZD 1890 TRAP 2000:? #2:FR
SX 1100 ? " Filename For 1st Frames"
:TRAP 1100:INPUT F$=FN$="D":FN$(3,3+
LEN(F$))=F$(1,LEN(F$))
SA 1110 FN$(3+LEN(F$),6+LEN(F$))=".FRM":T
RAP 2000:? #2:FN$
BZ 1115 IF FR<65 THEN 1140
ZW 1120 ? " Filename For 2nd Frames"
:TRAP 1120:INPUT F$=FN$="D":FN$(3,3+
LEN(F$))=F$(1,LEN(F$))
SG 1130 FN$(3+LEN(F$),6+LEN(F$))=".FRM":T
RAP 2000:? #2:FN$
GK 1140 CLOSE #2:? :? " Movie Crea
tor":GET #3,K:? "":GOTO 100
TR 2000 CLOSE #2:? :? " Error- ";PEE
K(195):GET #3,K:? "":GOTO 100

```

LISTING 4

```

FN 10 REM MEG-ANIMATOR, LISTING FOUR
XU 11 REM MOVPL.BAS
ZI 20 REM BY JACOB DONHAM
VH 30 REM (c)1987, ANTIC
BL 90 POKE 106,40:CB=40:SB=56:GRAPHICS 0:
POKE 752,1:POKE 710,0:DIM F$(8),FN$(20
),
BZ 100 ? " Movie Filename":TRAP 1
00:INPUT F$=FN$="D":FN$(3,3+LEN(F$))=
F$(1,LEN(F$))
SE 110 FN$(3+LEN(F$),6+LEN(F$))=".MOV":TR
AP 1990:OPEN #2,4,0,FN$
```

```

NE 115 INPUT #2,FNS:GRAPHICS 18:7 #6:7 #6
:?:#6:?:#6;FNS
LA 120 INPUT #2,B5:FOR I=1 TO B5:INPUT #2
,FNS:WH=CB+2*(I-1):HM=2:GOSUB 4000:NEX
TI
BK 130 INPUT #2,FR:INPUT #2,FNS:WH=SB:HM=
64:GOSUB 4000:IF FR>64 THEN INPUT #2,F
NS:WH=SB+64:HM=40:GOSUB 4000:CLOSE #2
NX 140 DL=PEEK(560)+256*PEEK(561):FRM=1:P
OKE DL+4,0:POKE 756,CB
XA 150 POKE DL+5,SB+FRM-1:X=(SB+FRM-1)*25
6:POKE 756,CB+PEEK(X+248)*2:FOR I=0
TO 3:SOUND I,PEEK(X+248+I),10,10
JL 160 NEXT I:POKE 540,PEEK(X+249)
KW 170 IF PEEK(540)>8 THEN 170
BG 180 IF FRM<FR THEN FRM=FRM+1:GOTO 150
OI 190 END
DP 1990 CLOSE #2
KC 2000 ? "Error- ",PEEK(195)
QX 2010 IF PEEK(764)=255 THEN 2010
BG 2020 POKE 764,255:7 "?":GOTO 100
YF 4000 TRAP 4020:OPEN #1,4,0,FNS:POKE 85
2,0:POKE 853,WH:POKE 856,0:POKE 857,HM
:POKE 850,7
JU 4010 A=USR(ADR("hhhMLVM"),16):CLOSE #1
:RETURN
KV 4020 CLOSE #1:GOTO 2000

```

LISTING 5

```

JC 10 REM MEG-ANIMATOR, LISTING FIVE
DB 11 REM MEGAMATOR.BAS
ZI 20 REM BY JACOB DONHAM
PT 30 REM <c>1987, ANTIC PUBLISHING
XX 50 GRAPHICS 0:POKE 710,0:POKE 752,1
CL 90 OPEN #3,4,0,"K;" *** MAIN MENU ***:?
AU 95 ? " MegAmator? "
DX 100 ? " by Jacob Donham? "
LB 105 ? " B BLOCK Editor"
ZZ 110 ? " F FRAME Editor"
AD 120 ? " M Movie Editor"
YW 130 ? " M Movie Player"
EJ 140 ? " "
HL 150 GET #3,K
WM 160 IF K=ASC("1") THEN RUN "D:BLKED.BA
5"
LU 170 IF K=ASC("2") THEN RUN "D:FRMED.BA
5"
CO 180 IF K=ASC("3") THEN RUN "D:MOVED.BA
5"
CJ 190 IF K=ASC("4") THEN RUN "D:MOUPL.BA
5"
NK 200 GOTO 150

```

most players can't take it for more than 45 seconds

CURRENT EVENTS

Article on page 17

LISTING 1

Don't type the
TYPO II Codes!

```

XM 10 REM CURRENT EVENTS
WQ 20 REM BY JAMES HAGUE
PT 30 REM <c>1987, ANTIC PUBLISHING
US 400 BRK=1:IF PEEK(53279)=5 THEN BRK=0
TU 110 GOSUB 9000
JE 120 GOSUB 8000:GOSUB 2000:PL=1
QT 130 PL= NOT PL:IF NOT PEEK(204) AND
NOT PEEK(205) THEN GOTO 3000
TA 140 D=USR(JOY,PL):IF NOT D THEN 180
HA 150 IF D=OPDIR(DIR(PL)) OR D=DIR(PL) T
HEN 180
LF 160 POS=POS(PL)+ADD(D):IF POS<MIN OR P
OS>MAX THEN 180
HX 170 A=PEEK(POS):IF A THEN DIR(PL)=D:GO
TO 210
EF 180 D=DIR(PL):IF NOT D THEN 130
PB 190 POS=POS(PL)+ADD(D):IF POS<MIN OR P
OS>MAX THEN DIR(PL)=0:GOTO 130
SY 200 A=PEEK(POS):IF NOT A THEN DIR(PL)
=0:GOTO 130
YU 210 IF POS=POS( NOT PL) THEN 1500
RZ 220 IF A=156 OR A=157 THEN 1000
DY 230 SOUND 0,50,X,8,8:POS(PL)=POS(B=YPC
PL):YP(PL)=YP(PL)+YPA(D):XP(PL)=XP(PL)
+XPA(D):C=USR(VMOVE,PL,B,YP(PL))
MM 240 POKE 53248+PL,XP(PL):POKE 53761,0:
IF A=158 THEN 500
LS 250 A=USR(CHOP,A):IF PL THEN A=A+192
GR 260 POKE POS,A:GOTO 130
SA 499 REM EVENT HANDLER
IA 500 A=0:IF PL THEN A=192
QN 510 POKE POS,27+A
TA 520 B=INT(RND(0)*5):IF EVENT(B) THEN 5
20
KF 530 EVENT(B)=1:ON B+1 GOTO 560,590,600
VI 540 A=0:IF B=4 THEN A=192
WF 550 POKE POS-2,7+A:POKE POS-1,7+A:POKE
POS-20,6+A:POKE POS+1,7+A:POKE POS+2,
7+A:POKE POS+20,6+A:GOTO 600
EM 560 A=USR(VMOVE,0,YP(0),0):A=USR(VMOVE
,1,YP(1),0)
UQ 565 A=DIR(0):DIR(0)=DIR(1):DIR(1)=A:A=
POS(0):POS(0)=POS(1):POS(1)=A
NU 570 POKE 53248,XP(1):A=USR(VMOVE,0,YP(
0),YP(1)):POKE 53249,XP(0):A=USR(VMOVE
,1,YP(1),YP(0))
MN 580 A=XP(0):XP(0)=XP(1):XP(1)=A:A=YP(0)

```

```

> :YP(0)=YP(1):YP(1)=A
585 POKE POS(0),USR(CHOP,PEEK(P05(0)))>
:POKE POS(1),USR(CHOP,PEEK(P05(1)))+19
2:GOTO 600
RK 590 POKE 206,104:POKE 207,1:GOTO 130
FG 600 A=1:FOR B=15 TO 0 STEP -1:SOUND 0,
60,10,B:SOUND 1,45,10,B:GOSUB 7100:NEX
T B:GOTO 130
LC 999 REM TRANSPORT HANDLER
LC 1000 A=0:IF PL THEN A=192
UN 1010 IF XP(PL)=56 THEN XP(PL)=192:POKE
53248+PL,192:POKE POS,0:POKE P05+1,12
+A:POS=POS+18:POKE POS+1,0:GOTO 1030
NX 1020 XP(PL)=56:POKE 53248+PL,56:POKE P
05,0:POKE POS-1,13+A:POS=P05-18:POKE P
05-1,0
TP 1030 POS(PL)=POS:IF POS=POS( NOT PL) T
HEN POKE POS,PEEK(POS)-14-<XP(PL)=56>:
GOTO 1500
GT 1040 IF XP(PL)=56 THEN POKE POS,12+A:G
OTO 1060
CM 1050 POKE POS,13+A
FE 1060 FOR A=3 TO 15:SOUND 0,20,2,A:NEXT
A:GOTO 130
LL 1499 REM PLAYER COLLISION
KK 1500 FOR A=250 TO 0 STEP -10:POKE 712,
A/10:SOUND 0,A,8,14:NEXT A
SC 1505 A=USR(VMOVE,0,YP(0),0):A=USR(VMOVE
,E,1,YP(1),0)
AC 1510 POS(0)=SCREEN+221:XP(0)=56:POKE 5
3248,56:A=USR(VMOVE,0,YP(0),208):YP(0)
=208:POKE POS(0),10
RF 1520 POS(1)=SCREEN+38:XP(1)=192:POKE 5
3249,192:A=USR(VMOVE,1,YP(1),48):YP(1)
=48:POKE POS(1),201
KC 1530 DIR(0)=INT(RND(0)*2)+1:DIR(1)=INT
(RND(0)*2)+3:GOTO 130
LH 1999 REM LEVEL SET-UP
DR 2000 FOR B=201 TO 192 STEP -1:POKE 709
,0:A=1:GOSUB 7100:NEXT B:GRAPHICS 18:G
OSUB 700:POKE 559,0
WF 2010 POKE 756,CHSET/256:POKE 789,0:POK
E 710,38:POKE 704,0:POKE 785,0
PW 2015 SCREEN=PEEK(88)+256*PEEK(89):MIN=
SCREEN+20:MAX=SCREEN+239
TH 2020 A=INT(TIME/60):POKE 205,(A>0)MA:
IF A>60=TIME THEN POKE 204,0:GOTO 2040

```

continued on next page

```

ID 2830 A$=STR$(TIME-A*60):POKE 204,VAL(A$)
UD 2840 POKE 206,0:POKE 207,0
DA 2850 POS(0)=SCREEN+221:XP(0)=56:YP(0)=
288:POS(1)=SCREEN+38:XP(1)=192:YP(1)=4
8
ZD 2860 FOR A=0 TO 1:POKE 53248+A,XP(A):B=
USR(VMOVE,A,0,YP(A)):DIR(A)=0:NEXT A
OE 2870 FOR A=0 TO 4:EVENT(A)=0:NEXT A
BL 2880 COLOR 6:PLOT 1,2:DRAWTU 1,10:PLOT
18,2:DRAWTO 18,10
XC 2890 FOR A=1 TO 11 STEP 2:COLOR 27:PLO
T 1,A:PLOT 18,A:COLOR 7:PLOT 2,A:DRAWT
0 17,A:NEXT A
KC 2100 FOR A=5 TO 14 STEP 3:COLOR 14:PLO
T A,1:COLOR 15:PLOT A,11:COLOR 6:PLOT
A,2:DRAWTO A,10:COLOR 27:PLOT A,3
XU 2110 PLOT A,5:PLOT A,7:PLOT A,9:NEXT A
:COLOR 8:PLOT 1,1:COLOR 9:PLOT 18,1
PC 2120 COLOR 10:PLOT 1,11:COLOR 11:PLOT
18,11
DJ 2130 POKE 53277,2:POKE 559,62
UR 2140 COLOR 190:FOR A=1 TO 5
KL 2150 B=INT(RND(0)*4)*3+5:C=INT(RND(0)*
4)*2+3:LOCATE B,C,D:IF D=190 THEN 2150
DL 2160 PLOT B,C:FOR B=15 TO 0 STEP -1:50
UND 0,100,10,B:NEXT B:NEXT A
CS 2170 FOR B=0 TO 8:POKE 704,128+B:POKE
705,16+B:A=2:GOSUB 7100:NEXT B
LK 2180 FOR B=0 TO 10:POKE 709,B:GOSUB 71
00:NEXT B
XS 2190 FOR A=3 TO 9 STEP 2:COLOR 188:PLO
T 0,A:COLOR 189:PLOT 19,A:NEXT A
ZA 2200 POSITION 5,0:? #6;"time ";:B=160:
GOSUB 7050:A=40:GOSUB 7100:POSITION 9,
6:? #6;"GO"
SL 2210 FOR A=1 TO 12:FOR B=15 TO 0 STEP
-2:SOUND 0,80,10,B:NEXT B:B=FOR B=15 TO
0 STEP -2:SOUND 0,50,10,B:NEXT B
UQ 2220 NEXT A:POSITION 9,6:? #6;" ":"COL
OR 42:PLOT 1,11
RD 2230 COLOR 137:PLOT 18,1:POKE 203,60:5
OND 0,0,0,0:RETURN
LG 2999 REM END GAME
YF 3000 POKE 203,255:POKE 709,10:POKE 537
65,0:POKE 53767,0
CH 3010 FOR A=0 TO 1:B=USR(VMOVE,A,YP(A)),
0:NEXT A:POKE 53277,0
WU 3020 SOUND 0,46,12,14:SOUND 1,48,12,14
:A=90:GOSUB 7100:POKE 53761,0:POKE 537
63,0
BC 3030 POSITION 2,0:? #6;"PL1:000 000":C
HR$(146),CHR$(154);;"000"
SM 3040 COLOR 32:P1=0:P2=P1:FOR B=1 TO 11
:D=SCREEN+B*20:FOR C=D+1 TO D+18
IU 3045 D=PEEK(C):IF NOT D THEN 3070
XZ 3050 IF D<64 THEN P1=P1+1
DS 3060 IF D>192 THEN P2=P2+1
3070 NEXT C:A=P1:POSITION 6,0:GOSUB 32
00:A=P2:POSITION 15,0:GOSUB 3200
3080 PLOT 6,B:DRAWTU 19,B:FOR C=15 TO
0 STEP -0.6:SOUND 0,50,2,C:NEXT C:NEXT
B
OH 3120 IF P1=P2 THEN POSITION 3,5:? #6;"THE
LITTLE HAT":POSITION 3,6:? #6;"END
ED IN A tie":GOTO 3160
EY 3130 POSITION 6,4:IF P1>P2 THEN ? #6;""
PLAYER 1":GOTO 3150
KG 3140 ? #6;"PIGLET ";CHR$(146)
YC 3150 POSITION 3,6:? #6;"REIGNS SUPREME
"
KN 3160 FOR B=15 TO 0 STEP -1:FOR A=250 T
0,10 STEP -20:SOUND 0,A,10,B:SOUND 0,A
/2,10,B:NEXT A:NEXT B:GOTO 120
FM 3200 IF A<10 THEN ? #6;CHR$(176);
WK 3210 IF A<100 THEN ? #6;CHR$(176);
JB 3220 A$=STR$(A):FOR A=1 TO LEN(A$):? #6;
CHR$(VAL(A$)(A)+176):NEXT A:RETUR
N
ZM 7000 IF BRK THEN POKE 16,112:POKE 5377
4,112:REM DEBUG
AI 7010 RETURN
EN 7049 REM TIME PRINTER
VY 7050 A=INT(TIME/60):? #6;CHR$(16+B);CH
R$(16+A+B);CHR$(26):IF A*60=TIME THEN
? #6;CHR$(16+B);CHR$(16+B):RETURN
YU 7060 A$=STR$(TIME-A*60):? #6;CHR$(VAL(
A$(1,13)+16+B);CHR$(VAL(A$(2))+16+B):R
ETURN
OC 7099 REM WAIT ROUTINE (A)
HD 7100 POKE 20,0
WH 7110 IF PEEK(20)<A THEN 7110
AN 7120 RETURN
QA 7999 REM TITLE SCREEN
EI 8000 POKE 559,0:POKE 560,TDLH:POKE 561
,TDLH:POKE 709,250:POKE 710,0:POKE 712

```

LISTING 2

```
OK 18 REM CURRENT EVENTS, LISTING TWO
HQ 20 REM BY JAMES HAGUE
FJ 30 REM ((> 1985, 1987 ANTIC PUBLISHING
EV 35 REM ((CREATES LINES 9025-9030, 9080-
9100, 9120 & 9180-9186)
EV 40 REM CLINES 10-250 MAY BE USED WITH
OTHER BASIC LOADERS IN THIS ISSUE.
IJ 50 REM CHANGE LINE 70 AS NECESSARY.)
PR 60 DIM FNS$(20), TEMP$(20), AR$(93) :DPL=P
```

```

EKK(10592):POKE 10592,255
W0 70 FN$="D:_LINES.LST":REM THIS IS THE N
A ME OF THE DISK FILE TO BE CREATED
RD 80 ? "Disk or Cassette?":POKE 764,25
5
PY 90 IF NOT (PEEK(764)=18 OR PEEK(764)=
58) THEN 90
TH 100 IF PEEK(764)=18 THEN FN$="C:"
UB 110 POKE 764,255:GRAPHICS 0?: AN
TIC'S GENERIC BASIC LOADER"
MY 120 ?, "BY CHARLES JACKSON"
KB 130 POKE 10592,DPL:TRAP 200
PU 140 ?:?:? "Creating ";FN$?:? "...Plea
se Stand by."
LW 150 RESTORE :READ LN:LM=LN:DIM AS(LN):
C=1
BQ 160 AR$="":READ AR$
YC 170 FOR X=1 TO LEN(CAR$) STEP 3:POKE 75
2,255
DM 180 LM=LM-1:POSITION 10,10?: "Countdo
wn...T-",INT(LM/10);"
BK 190 A$(C,C)=CHR$(VAL(CAR$(X,X+2))):C=C+
1:NEXT X:GOTO 160
MM 200 IF PEEK(195)=5 THEN ?:?:? "TOO
MANY DATA LINES!":? "CANNOT CREATE FIL
E!":END
CM 210 IF C<LN+1 THEN ?:? "TOO FEW DATA
LINES!":? "CANNOT CREATE FILE!":END
UQ 220 IF FN$="C:" THEN ?:? "Prepare ca
ssette, Press [RETURN]!"
AR 230 OPEN #1,8,0,FNS
PV 240 POKE 766,1?:#1:AS:POKE 766,0
AL 250 CLOSE #1:GRAPHICS 0?: "COMPLETED"
"
KS 1000 DATA 845
SX 1010 DATA 0570488500530320680730770320
77079086036040052054041058077079086036
061034104104133241104133240
OC 1020 DATA 1041332131041332121041332391
04133238160000177240145212230212208002
230213238240288092230241198
SD 1030 DATA 2382082341982390162300960340
58077079086061065068082040077079086036
041155057048051048032074079
LP 1040 DATA 0890360610341041041332131041
70189120002162004201011240016202201013
240011202201007248006202281
LE 1050 DATA 0142400012021342120960340580
7407908906106506882040074079089036041
155057048056048032065061085
IV 1060 DATA 0830828400650680820400341041
69000133205168169224133206177205145203
20020824923020422086165206
EU 1070 DATA 102262082390960340410411550
57048057048032065061085083082040077079
86044865068082040034060060
FR 1080 DATA 060060060060060060060000002552
55255255088888800000031063063063060606
800002482522522520600600606

```

```

UI 1090 DATA 0600630630630310000000600602
522522522480000000060062063063063062
03404104406707208306984043
EH 1100 DATA 0520560404530530411550570488
57051032065061085083082040077079086044
065068082040034060060124252
QY 1110 DATA 25225225212460000002552552
552551260600601262552552550000000034
04104406707208306984043049
CL 1120 DATA 0480500440500530411550570490
48048032065061085083082040077079086044
065068082040034060126255255
DR 1130 DATA 2552551260600000030150632550
63015003000192240252255252240192126195
219243247255247126034041044
WH 1140 DATA 067072083069840430500490540
44051050041155057049050048032065061085
083082040077079086044065568
ZH 1150 DATA 0828400341121121121121121121
12071000000112006112007112112006112002
00000211211200265034041044
XM 1160 DATA 0840680760440500530411550570
49056048032065061085083082040077079086
04406568082040034104160010
TP 1170 DATA 1620061690070760922281652030
48101198203208839169060133203248165284
240005056233001016011165205
MD 1180 DATA 2400210562330011332051690891
33204160010165205032154006165204032154
006216165206208007168169010
IQ 1190 DATA 1662072400261652060562330011
33034041044049053051054044055053041155
0570849056050032065061085083
DH 1200 DATA 08200077079060440650680820
40034206165207233000133207162136160040
173010210141196082141199082
HH 1210 DATA 1411970020410151410042101410
06210142005210140007210138208036206174
006208031169002141174006165
LK 1220 DATA 208141196002152892302081982
09141199002201016208008169031133209169
128133034041044049054049049
UH 1230 DATA 0440550530411550570490560520
32065061085083082040077079086044065068
0820400342080076098228072074
YJ 1240 DATA 0740740740091441450882001040
41015009144145088200200096002104104133
213104041063133212096104184
YI 1250 DATA 1332121048241050001050041332
131041041681620151690001452122002016
250104170104240012168189228
IR 1260 DATA 0061452122002322240160340410
44049054056054044055053041155057049056
054032065061085083082040077
UU 1270 DATA 0790860440650680820400342082
45096060126255231195195231255255231195
195231255126060034041044049
RD 1280 DATA 055054049044049057041155

```

40% faster basic for you Article on page 35

FAST-STACK AND FAST-JUMP

LISTING 1

Don't type the
TYPO II Codes!

```

KG 10 REM FASTPROG.BAS, LISTING 1
RI 20 REM BY BILL BODENSTEIN
PT 30 REM <>1987, ANTIC PUBLISHING
EV 40 REM CLINES 18-250 MAY BE USED WITH
OTHER BASIC LOADERS IN THIS ISSUE.
IJ 50 REM CHANGE LINE 70 AS NECESSARY.]
PR 60 DIM FNS(20),TEMP$(20),AR$(93):DPL=P
EKK(10592):POKE 10592,255
GB 70 FN$="D:FASTPROG.LST":REM THIS IS TH
E NAME OF THE DISK FILE TO BE CREATED
RD 80 ? "Disk or Cassette?":POKE 764,25
5
PY 90 IF NOT (PEEK(764)=18 OR PEEK(764)=
58) THEN 90
TH 100 IF PEEK(764)=18 THEN FN$="C:"
UB 110 POKE 764,255:GRAPHICS 0?: AN
TIC'S GENERIC BASIC LOADER"

```

```

MY 120 ?, "BY CHARLES JACKSON"
KB 130 POKE 10592,DPL:TRAP 200
PU 140 ?:?:? "Creating ";FN$?:? "...Plea
se Stand by."
LW 150 RESTORE :READ LN:LM=LN:DIM AS(LN):
C=1
BQ 160 AR$="":READ AR$
YC 170 FOR X=1 TO LEN(CAR$) STEP 3:POKE 75
2,255
DM 180 LM=LM-1:POSITION 10,10?: "Countdo
wn...T-",INT(LM/10);"
BK 190 A$(C,C)=CHR$(VAL(CAR$(X,X+2))):C=C+
1:NEXT X:GOTO 160
MM 200 IF PEEK(195)=5 THEN ?:?:? "TOO
MANY DATA LINES!":? "CANNOT CREATE FIL
E!":END

```

continued on next page

```

CM 210 IF C<LN+1 THEN ? :? "QTOO FEW DATA
  LINES!":? "CANNOT CREATE FILE!":END
UQ 220 IF FNS="C:" THEN ? :? " Prepare ca
  ssette, Press [RETURN]!"
AR 230 OPEN #1,8,0,FNS
PV 240 POKE 766,1:?:#1,A$:POKE 766,0
AL 250 CLOSE #1:GRAPHICS 0:?"[COMPLETED]"
"
DV 1800 DATA 200
PG 1010 DATA 0480328880610850830820400650
  68082040034104169160133225169000133224
  168162253142001211177224162
HD 1020 DATA 2551420012111452242002082392
  3022516522520192208231169139141198182
  169165141192182141197182169
DT 1030 DATA 1181412041891691601412051891
  62020160092177212157113160136202016247
  896162253142001211165160133
SZ 1040 DATA 1381651611331391600021771381
  33159024096034041041058067076082032155
  0490832088061085083082040065
VG 1050 DATA 0680820400341041690321411701
  6916900614117169169160141172169169234
  141173169162032160067177212
II 1060 DATA 1570001601362020162470962341
  62253142001211160001165161209138144014
  208087136165160209138144005
EP 1070 DATA 1651391641380961651371641360
  96034041041155

```

LISTING 2

```

0100 ; FAST STACK
0110 ; BY BILL BODENSTEIN
0120 ; (c)1987, ANTIC PUBLISHING
0130 ;
0140 ; EQUATES
0150 ;
0160 PORTB = $D301 ;Toggle ROM
0170 BASIC.ON = 253
0180 BASIC.OFF = 255
0190 ;
0200 LDA = 165 ;Decimal opcode
0210 STMCUR = $8A ;BASIC line ptr
0220 FORLN = $A0 ;Line # put here
0230 ;
0240 PUT.PATCH1 = $A071 ;Patch after
0250 ; STOP/END
0260 PUT.PATCH2 = PUT.PATCH1+5
0270 ;
0280 ; Relocatable, but
0290 *= $0600 ;could be called
0300 ; via USR(1536)
0310 STARTCODE
0320 PLA ;Remove # args
0330 COPY.BASIC
0340 LDA #$A0 ;Start of BASIC
0350 STA $E1
0360 LDA #$80
0370 STA $E8
0380 TAY
0390 LOOP1
0400 LDX #BASIC.ON
0410 STX PORTB ;BASIC ROM on
0420 LDA ($E0),Y ;Get a byte
0430 LDX #BASIC.OFF
0440 STX PORTB ;BASIC RAM on
0450 STA ($E0),Y ;Copy byte
0460 INY
0470 BNE LOOP1 ;And loop
0480 ;
0490 INC $E1
0500 LDA $E1
0510 CMP #192 ;Until all moved
0520 BNE LOOP1
0530 ;
0540 MODIFY.BASIC
0550 LDA #STMCUR+1 ;LDA ($8A),Y=>
0560 STA $B6C6 ; LDA $8B
0570 LDA #LDA ; and LDA $8A
0580 STA $B6C8
0590 STA $B6C5
0600 ;
0610 LDA # <PUT.PATCH2
0620 STA $BDCC ;Change JSR from
0630 LDA # >PUT.PATCH2
0640 STA $BDCC ;$B816 to patch2
0650 ;
0660 ;Install patch to re-enable ROM
0670 ;at STOP or END, and Patch to
0680 ;change line pointer.
0690 LDX #ENDCODE-PATCH1-1

```

```

0700 LDY #ENDCODE-STARTCODE-1
0710 LOOP2
0720 LDA ($D4),Y ;Move bytes from
0730 STA PUT.PATCH1,X ;USR code
0740 DEY
0750 DEX
0760 BPL LOOP2 ;Done when patch
0770 ;
0780 RTS ;installed
0790 ;
0800 ;Patches to be placed in code
0810 ;after STOP/END. Note: once
0820 ;BASIC ROM is enabled by Patch1,
0830 ;Patch2 won't be executed.
0840 PATCH1
0850 LDX #BASIC.ON
0860 STX PORTB
0870 ;
0880 PATCH2
0890 LDA FORLN ;Ln addr is here
0900 STA STMCUR ;Point to it
0910 LDA FORLN+1
0920 STA STMCUR+1
0930 LDY #2 ;(Rest is the
0940 LDA ($STMCUR),Y ;Same)
0950 STA $9F
0960 CLC
0970 RTS
0980 ENDCODE

```

LISTING 3

```

0100 ; FAST JUMP
0110 ; BY BILL BODENSTEIN
0120 ; (c)1987, ANTIC PUBLISHING
0130 ;
0140 ; EQUATES
0150 ;
0160 PORTB = $D301 ;Toggle ROM here
0170 BASIC.ON = 253
0180 ;
0190 JSR = 32 ;Decimal opcodes
0200 NOP = 234
0210 STMTAB = $88 ;Start of prog
0220 STMCUR = $8A ;Current line
0230 FORLN = $A0 ;Lnno saved here
0240 ;
0250 PUT.PATCH = $A000 ;Mem for patch
0260 JSR.HERE = PUT.PATCH+6 ;Actual
0270 ; code
0280 ;
0290 *= $0600 ;Relocatable but
0300 ; could be called
0310 ; via USR(1536)
0320 STARTCODE
0330 PLA ;Remove # args
0340 ;
0350 ;Before searching for line,
0360 ;JUMP to patch.
0370 MODIFY.BASIC
0380 LDA #JSR ;JSR PATCH
0390 STA $A9AA
0400 LDA # <JSR.HERE
0410 STA $A9AB
0420 LDA # >JSR.HERE
0430 STA $A9AC
0440 LDA #NOP ;NOP
0450 STA $A9AD
0460 ;
0470 ;Install patch in unused (except
0480 ;with NEW) BASIC RAM.
0490 LDX #ENDCODE-PATCH-1
0500 LDY #ENDCODE-STARTCODE-1
0510 LOOP
0520 LDA ($D4),Y ;Move bytes from
0530 STA PUT.PATCH,X ;USR code
0540 DEY
0550 DEX
0560 BPL LOOP ;Done when patch
0570 RTS ;installed
0580 ;
0590 ;Patch to be installed in BASIC
0600 ;RAM. If NEW occurs, BASIC ROM
0610 ;is enabled so that patch isn't
0620 ;accidentally executed.
0630 ;(Remember: With FAST-STACK, ROM
0640 ;is always enabled in direct
0650 ;mode.)
0660 PATCH
0670 NOP
0680 LDX #BASIC.ON
0690 STX PORTB
0700 ;

```

```

0710 LDY #1 ;IS INNO >= CURN
0720 LDA FORLN+1 ; INNO???
0730 CMP <STMCUR>,Y
0740 BCC NORMAL
0750 BNE FAST
0760 ;
0770 DEY
0780 LDA FORLN
0790 CMP <STMCUR>,Y
0800 BCC NORMAL
0810 ;
0820 FAST
0830 LDA STMCUR+1 ;YES, START FROM
0840 LDY STMCUR ; CURRENT LINE
0850 RTS
0860 NORMAL
0870 LDA STMTAB+1 ;NO, START FROM
0880 LDY STMTAB ; FIRST LINE
0890 RTS
0900 ENDCODE

```

two-player ACTION! shootout

KILLER CHESS

Article on page 9

LISTING 1

Don't type the
TYPO II Codes!

```

; KILLER CHESS
; BY GREG KNAUSS
; ©1987, ANTIC PUBLISHING

CARD PM,CH
BYTE I,J,K,STK,PLR,LOC,CAP,OK
BYTE ARRAY X<2>,Y<2>,OX<2>,DY<2>,
        HOLD<2>,PAU<2>,SND<2>,DIS<2>
INT X1,Y1,DX,DY,DUM1,DUM2

PROC CURSOR()
; SHAPE FOR CURSORS
E255 129 129 129 129 129 255

PROC CHRS()
; BOARD EDGE
E 0 0 0 0 0 0 0 0
  0 0 0 0 15 15 15 15
  0 0 0 0 0 0 0 0
  0 0 0 0 255 255 255 255
  0 0 0 0 240 240 240 240
  15 15 15 15 15 15 15 15
240 240 240 240 240 240 240 240
  15 15 15 15 0 0 0 0
  255 255 255 255 0 0 0 0
  240 240 240 240 0 0 0 0

; PIECES
  0 0 56 56 16 124 0
  0 84 124 56 56 124 0
  0 6 58 124 28 28 60 126
  0 16 24 108 124 56 16 124
  0 214 254 124 56 56 124 254
  0 16 56 146 254 124 56 124

; TITLE
  0 247 108 112 112 108 246 3
  0 62 102 96 96 102 60 0
  24 0 56 24 24 24 60 0
224 96 124 102 102 102 247 0
  56 24 24 24 24 60 0
  0 0 68 102 126 96 62 0
  0 0 220 102 96 96 240 0
  0 0 62 96 60 6 124 0

; "PRESS START"
  0 238 170 238 140 138 0 0
  0 238 136 206 130 238 0 0
  1 225 129 225 33 225 1 0
  255 17 123 27 219 27 255 0
  255 17 85 17 83 85 255 0
  240 16 176 176 176 180 240 0

PROC SETUP()
GRAPHICS<18> POKE<559,0>
POKE<559,46>

; COLORS
SETBLOCK<706,2,66>
POKE<704,14> POKE<705,8>

0810 ;
0820 FAST
0830 LDA STMCUR+1 ;YES, START FROM
0840 LDY STMCUR ; CURRENT LINE
0850 RTS
0860 NORMAL
0870 LDA STMTAB+1 ;NO, START FROM
0880 LDY STMTAB ; FIRST LINE
0890 RTS
0900 ENDCODE

; P/M GRAPHICS
PM=<PEEK<106>-80>*256
POKE<54279,PM/256> POKE<53277,3>
SETBLOCK<53258,2,3> ZERO<PM,1024>
POKE<623,2> PM==+512 K=51
FOR I=32 TO 95 STEP 8 DO
  FOR J=0 TO 7 DO POKE<PM+I+J+256,K>
    POKE<PM+I+J+384,K> OD K=255-K OD

; REDEFINED CHARACTERS
CH=<PEEK<106>-16>*256
MOVEBLOCK<CH,CHRS,512>
POKE<756,CH/256>

; DRAW BOARD
POSITION<5,1> PRINTD<6,"XXXXXXXXXXXXXX">
  FOR I=2 TO 9 DO POSITION<5,I>
    PRINTD<6,"# "#> OD
POSITION<5,10> PRINTD<6,"XXXXXXXXXXXXXX">
POSITION<6,2> PRINTD<6,"+,-./,+,>
POSITION<6,3> PRINTD<6,"*****"*>
POSITION<7,5> PRINTD<6,"#####"*>
POSITION<7,6> PRINTD<6,"#####"*>
POSITION<6,8> PRINTD<6,"*****"*>
POSITION<6,9> PRINTD<6,"*****"*>
POSITION<7,11> PRINTD<6,"#####"*>
POKE<53258,96> POKE<53251,128>
POKE<559,46>

; WAIT FOR [START]
I=0 DO POKE<54282,0> POKE<53273,I>
I==+3 UNTIL PEEK<53279>=6 OD

; DRAW PIECES
POSITION<6,2> PRINTD<6,"**" X+>
POSITION<6,3> PRINTD<6,"*,* X->
POSITION<6,4> PRINTD<6,"-* X+>
POSITION<6,5> PRINTD<6,"*,* X->
POSITION<6,6> PRINTD<6,"/* X+>
POSITION<6,7> PRINTD<6,"-* X->
POSITION<6,8> PRINTD<6,"*,* X->
POSITION<6,9> PRINTD<6,"** X+>
POSITION<7,11> PRINTD<6,"" X->
RETURN

PROC MAIN()
; GAME LOOP
DO
; SETUP()
X<0>=6 Y<0>=5 X<1>=13 Y<1>=6
HOLD<0>=0 HOLD<1>=0 PAU<0>=0 PAU<1>=0
PLR=1

; PLAYER TURN LOOP
DO
; ALTERNATE PLAYERS
PLR=1-PLR

```

continued on next page

```

; RESET THESE FOR EACH TURN
X1=0 Y1=0 POKC77,0>
IF PAU<PLR>=0 THEN SOUND<PLR,0,0,0>
FI

; MOVE WHICH WAY???
STK=STICK<PLR>
IF STK=14 OR STK=10 OR STK=6 THEN
Y1=-1 FI
IF STK=13 OR STK=9 OR STK=5 THEN Y1=1
FI
IF STK=11 OR STK=18 OR STK=9 THEN
X1=-1 FI
IF STK=7 OR STK=6 OR STK=5 THEN X1=1
FI

; KEEP PLAYER ON BOARD
LOC=LOCATE<X<PLR>+X1,Y<PLR>+Y1>
IF LOC<10 THEN X1=0 Y1=0 FI

; MOVE CURSOR
IF Y1<>0 THEN
ZERO<PM+128*PLR+16+8*Y<PLR>,8> FI
X<PLR>==+X1 Y<PLR>==+Y1
POKE<53248+PLR,8*X<PLR>+48>
MOVEBLOCK<PM+128*PLR+16+8*Y<PLR>,
CURSOR,8>

; WAIT! HE'S PLACING A PIECE!
IF HOLD<PLR>>0 AND STRIG<PLR>=0 AND
PAU<PLR>=0 THEN CAP=0 OK=0 DX=0 DY=0

; SOMETHING TO CAPTURE!
IF LOC<>32 THEN CAP=1 FI

; FIND DELTA VALUES
DUM1=X<PLR>
DUM2=0X<PLR>
DX=DUM1-DUM2

DUM1=Y<PLR>
DUM2=0Y<PLR>
DY=DUM1-DUM2

; FLIP FOR PLAYER 2
IF PLR=1 THEN DX=-DX DY=-DY FI

; IS IT LEGAL???
; PAWN
IF HOLD<PLR>=1 THEN
IF DX=1 AND DY=0 AND CAP=0 THEN
OK=1 FI
IF DX=2 AND DY=0 AND CAP=0 AND
0X<PLR>=7+PLR*5 THEN OK=1 FI
IF DX=1 AND (DY=1 OR DY=-1) AND
CAP=1 THEN OK=1 FI FI

; ROOK
IF HOLD<PLR>=2 THEN
IF (DX<>0 AND DY=0) OR (DX=0 AND
DY<>0) THEN OK=1 FI FI

; KNIGHT
IF HOLD<PLR>=3 THEN
IF (DX=2 AND DY=1) OR (DX=-2 AND
DY=1) THEN OK=1 FI

IF (DX=2 AND DY=-1) OR
(DX=-2 AND DY=-1) THEN OK=1 FI
IF (DX=1 AND DY=2) OR
(DX=-1 AND DY=2) THEN OK=1 FI
IF (DX=1 AND DY=-2) OR
(DX=-1 AND DY=2) THEN OK=1 FI FI

; BISHOP
IF HOLD<PLR>=4 AND (DX=DY OR DX=-DY)
THEN OK=1 FI

; QUEEN
IF HOLD<PLR>=5 THEN
IF DX=DY OR DX=-DY THEN OK=1 FI
IF (DX<>0 AND DY=0) OR (DX=0 AND
DY<>0) THEN OK=1 FI FI

; KING
IF HOLD<PLR>=6 THEN
IF (DX=1 AND DY=1) OR (DX=-1 AND
DY=1) OR (DX=1 AND DY=-1) THEN
OK=1 FI
IF (DX=1 AND DY=0) OR (DX=-1 AND
DY=0) THEN OK=1 FI
IF (DX=1 AND DY=-1) OR (DX=0 AND
DY=-1) OR (DX=-1 AND DY=-1) THEN
OK=1 FI FI

; CAN'T CAPTURE OWN PIECES OR
; BORDER
IF LOC>128*PLR+41 AND
LOC<128*PLR+127 OR LOC<10 THEN OK=0
FI

; DIDN'T MOVE
IF DX=0 AND DY=0 THEN OK=1 FI

; MAKE SURE JUMPS WEREN'T MADE,
; EXCEPT BY KNIGHT
IF HOLD<PLR><>3 THEN
I=0X<PLR> J=0Y<PLR>
X1=0 Y1=0
IF DX<0 THEN X1=-1 FI
IF DX>0 THEN X1=1 FI
IF DY<0 THEN Y1=-1 FI
IF DY>0 THEN Y1=1 FI
IF PLR=1 THEN X1=-X1 Y1=-Y1 FI
IF (DX<-1 OR DX>1) OR (DY<-1 OR
DY>1) THEN
DO
I==+X1 J==+Y1
K=LOCATE<I,J>
IF K<>32 THEN OK=0 FI
UNTIL (I=X<PLR>-X1 AND
J=Y<PLR>-Y1) OR K<10 OD FI FI

; LEGAL MOVE!
IF OK=1 THEN
COLOR=32 PLOT<0X<PLR>,0Y<PLR>>
COLOR=HOLD<PLR>+128*PLR+41

; QUEEN ME!
IF HOLD<PLR>=1 AND
X<PLR>=7*(1-PLR)+6 THEN
COLOR=128*PLR+46 FI

; KILL OTHER PLAYERS HOLD IF THAT'S
; WHAT WAS CAPTURED
IF X<PLR>=0X*(1-PLR) AND
Y<PLR>=0Y*(1-PLR) THEN
HOLD<1-PLR>=0
POSITION<11*(1-PLR)+4,2>
PRINTD<6," "> FI

; WHO'D HE LAND ON??
K=LOCATE<X<PLR>,Y<PLR>>

; WHOEVER IT WAS, KILL HIM
PLOT<X<PLR>,Y<PLR>>
COLOR=32 PLOT<11*PLR+4,2>

; A KING DIED!
IF K-128*(1-PLR)-41=6 THEN EXIT FI
HOLD<PLR>=0
SND<PLR>=100*PLR+100 DIS<PLR>=14 FI

; ILLEGAL MOVE...
IF OK=0 THEN SND<PLR>=255
DIS<PLR>=2 FI
PAU<PLR>=5 FI

; PICK UP PIECE
IF HOLD<PLR>=0 AND STRIG<PLR>=0 AND
PAU<PLR>=0 AND LOC<>32 AND
LOC>128*PLR+41 AND LOC<128*PLR+127
THEN

; Grab HOLD
HOLD<PLR>=LOC-128*PLR-41
0X<PLR>=X<PLR> 0Y<PLR>=Y<PLR>
COLOR=LOC PLOT<11*PLR+4,2>
SND<PLR>=100*PLR+100 DIS<PLR>=10
PAU<PLR>=5 FI

; DELAY
FOR CH=1 TO 2000 DO OD

; PAUSE FOR HUMANS
IF PAU<PLR>>0 THEN PAU<PLR>==1
SOUND<PLR,SND<PLR>,DIS<PLR>,
PAU<PLR>*2> FI

; NEXT PLAYER
OD

; VICTORY ROUTINE
SNDRST<> ZERO<PM,256> COLOR=32
FOR I=2 TO 9 DO FOR J=6 TO 13 DO
LOC=LOCATE<J,I> IF LOC>128*(1-PLR)
AND LOC<128*(1-PLR)+127 THEN
PLOT<J,I> FI OD OD PLOT<4,2>
PLOT<15,2>
; PAUSE
CH=0 DO CH==+1 FOR I=1 TO 100 DO OD
UNTIL CH=7500 OR PEEK<53279>=6 OD

; START NEW GAME
OD

```

Got-A-Minute Graphics

Article on page 45

LISTING 1

```

Rem FIREWORKS
Rem BY M. Lorenz/A. Moose
Rem (c)1987, ANTIC PUBLISHING
SetColor 0,0,0
C=1
Xcent=160
Ycent=100
Plot Xcent,Ycent
For Point=1 To 2000
  Inc C
  If C=16 Then
    C=1
  Endif
  Color C
  R=Point/10
  T=Point
  X=R*Cos(T)
  Y=R*Sin(T)
  Plot X+Xcent,Y+Ycent
  X=(Point+C)/16*Cos(Point+C+60)
  Y=(Point+C)/16*Sin(Point+C+60)
  Plot X+Xcent,Y+Ycent
Next Point
Pause 200
SetColor 0,7,7,7

```

LISTING 2

```

Rem DIAMOND
Rem BY MOOSE/LORENZ
Rem (c)1987, ANTIC PUBLISHING
Deffill 1
Color 1
Fill 0,0
For Row=10 To 160 Step 2
  C=Row/10
  Color C
  Draw 0,80 To 160,Row
  Draw 300,80 To 160,Row
Next Row
Pause 200

```

LISTING 3

```

Rem MOIRE
Rem BY M. LORENZ/A. MOOSE
Rem (c)1987, ANTIC PUBLISHING
Style=0.6
For Vert=-200 To -0
  For Horz=-320 To -0
    C=(190-Int((Vert*Vert+Horz*Horz)^Style))/3
    C=3*(C>>Int(C))+3
    Color C

```

```

      Horz1=Horz+300
      Vert1=Vert+200
      Plot Horz1,Vert1
      Plot 320-Horz1,Vert1
      Next Horz
      Next Vert

```

LISTING 4

```

Rem STARS
Rem BY M. LORENZ/A. MOOSE
Rem (c)1987, ANTIC PUBLISHING
SetColor 0,0,0
L=80
C=1
For J=80 To 160 Step 5
  Color C
  L=L-(Rnd(1))*(L-(Rnd(1)*160))
  K=160-L
  Draw 60+J,80 To 60+K,K
  Draw 69+K,K To 140,J
  Draw 140,J To 60+L,K
  Draw 60+L,K To 220-J,80
  Draw 220-J,80 To 60+L,L
  Draw 60+L,L To 140,160-J
  Draw 140,160-J To 60+K,L
  Draw 60+K,L To 60+J,80
  Inc C
  If C=16 Then
    C=1
  Endif
  Next J
  Pause 200
  Setcolor 0,7,7,7

```

LISTING 5

```

Rem SINESCAPES
Rem BY M. LORENZ/A. MOOSE
Rem (c)1987, ANTIC PUBLISHING
SetColor 0,0,0
C=1
For Sine=1 To 10
  Axis=Int(192*Rnd(1))
  Map1=192-Axis
  If Axis<Map1 Then
    Map2=Axis
    If Map1<Axis Then
      Map2=Map1
    Endif
  Endif
  Amp=Int(Map2*Rnd(1))
  Per=Int(100*Rnd(1)+1)
  Phi=6.28*Rnd(1)

```

continued on next page

```

Shift=Int(3*Rnd(1))+1
For X=0 To 300 Step Shift
  Color C
  Y=Amp*(Sin(X/Per-Phi))+Axis
  Plot X,Y
  Draw X,Y To X,AxIs
Next X
Inc C
If C=16 Then
  C=1
Endif
Next Sine
Pause 200
SetColor 0,7,7,7

```

LISTING 6

Rem TRIANGLES
Rem BY M. LORENZ/A. MOOSE

```

Rem (c)1987, ANTIC PUBLISHING
Dim T(220)
R=1
C=1
For I=0 To 127
  For A=1 To I+1
    Color C
    N=T(A)
    T(A)=Abs(R-T(A))
    C=1*(Not (T(A)))+1
    Plot 2*A-I+150,I+20
    R=N
  Next A
Next I
Pause 200
SetColor 0,7,7,7

```

continued from page 16

BALLISTICS

(application software)

Joseph Attanasio
1769 Silver Creek Circle
Stockton, CA 95207
(209) 478-3092
\$10, 48K disk
CIRCLE 201 ON READER SERVICE CARD

The **Ballistics** program allows comparison of most commercial bullets for rifles and pistols, with 19 pistol calibers and 33 rifle calibers to choose from. The data can be printed, and it includes case capacity, velocity, energy, drop, ballistics co-efficients and sectional density. Utilities include calculation of velocity or drop of a bullet at any range, time of flight, wind deflection for crosswinds, bullet path vs. sight path, and target movement during shot.

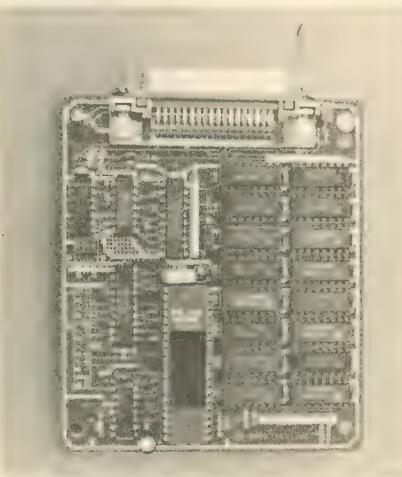
IMAGE BUFFER

(printer buffer)

Image Technology, Inc.
8150 S. Akron Street, Suite 405
Englewood, CO 80112
(303) 799-6433
CIRCLE 202 ON READER SERVICE CARD

This large-capacity buffer mounts *inside* most Epson printers and lets you transfer data to the printer at computer speed—then continue working while the printer operates at its own pace. Expandable to 512K, this buffer works

New Products



just like Epson's optional buffer and fits most Epson dot-matrix parallel printers. If you furnish the DRAM

LOTTO PROGRAM

(entertainment software)

Soft-Byte
P.O. Box 556, Forest Park
Dayton, OH 45405
(513) 278-8044
\$24.95, 48K disk

The **Lotto Program** performs an analysis of the past winning lotto numbers, attempting to show the probability of which numbers are likely to surface in the next few drawings. This menu-driven program produces easy-to-read charts from which you can try to pick hot and cold numbers, frequency, patterns, sums of digits, odd/even numbers, digit groups and more.

chips, the buffer costs \$109. Otherwise, \$133 includes eight 256K RAM chips, and \$157 includes 16 of the chips.

PRO FOOTBALL HANDICAPPER

(software)

SoftTech Group Inc.
P.O. Box 5394
Orchard Lake, MI 48033
(313) 851-4925
\$39.95, 16K disk or cassette
CIRCLE 157 ON READER SERVICE CARD

The **Pro Football Handicapping System** lets you handicap all National Football League games using past statistical information from the daily sports section in most newspapers, and you can use this program beginning at any point in the season. You'll need to spend only about five minutes entering the data necessary to perform the statistical analysis to predict the winner, the point spread and total points in the game.

Return the favor. When you call a manufacturer or supplier about a product you've seen advertised or otherwise mentioned in ANTIC, please tell them so. This will help us to continue to bring you the latest information about products that will make your Atari computer an even more valuable investment in the future.

—ANTIC ED

ATTENTION RETAILERS!

Starting with our March 1988 issue, **Antic—The Antic Resource** introduces

The Retail Directory

We can now deliver to *you*, our valued retailer, the over 100,000 Atari enthusiasts who read **Antic** every month.

Where: In every issue of **Antic**.

How: Send us the name of your store, address, city, state, zip code, and telephone number. Your listing will appear under your state in our Retail Directory pages.

Cost: \$30.00 per issue (three issue minimum order—\$90.00) or \$300.00 per year (a savings of 20%, or \$60.00 per year).

Listing Deadline for March 1988 Issue:
December 1, 1987

Send To: **Retail Listings**
Antic Publishing, Inc.
544 Second Street
San Francisco, CA 94107
(415) 957-0886

Please Note:

- Listings can include name of store, address and telephone number *only*. All other copy will be deleted for publication.
- All listing copy *must* be typewritten.
- If you already have terms with our retail department and sign up for listing in twelve issues, we will extend credit.

Terms are as follow:

- Upon our receipt of your listing, you will be billed for \$300.00. You may pay this total at once, or pay \$100.00 every 30 days until the \$300.00 is paid in full.
- Month-to-month listings must be prepaid by the listing deadline date for each issue (3 months prior to cover date, e.g., April 1988 issue deadline is January 1, 1988). Just mail in your payment, and if the listing is the same as a previous issue, include a note saying "repeat listing from (issue date)."
- If you need to correct or change your listing for any reason, please allow three months from the date you submit your change for the change to appear in the magazine.

WIN YOUR STATE LOTTO WITH YOUR COMPUTER!

"The home computer is the most powerful tool ever held by man" (or woman for that matter)! Are you still wasting money with random guesswork? This amazing program will analyze the past winning lottery numbers and produce a powerful probability study on easy to read charts in just seconds. With single key presses from a menu you'll see trends, patterns, odd/even, sum totals, number frequency and more on either your screen or printer. Includes automatic number wheeling, instant updating and a built-in tutorial to get you started fast and easy!

CHECKS & CHARGE CARDS ACCEPTED WITH NO SURCHARGE.

All orders shipped same day (except personal checks)
APPLE & IBM Compatibles \$24.95
Macintosh (requires M/S Basic) \$29.95
Commodore, Atari & Radio Shack \$21.95

Back-Up Copies - \$3.00

Please add \$2.00 for shipping and handling.

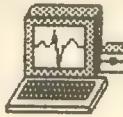
Phone credit given with orders.

(513) 233-2200

SOFT-BYTE

P.O. Box 556, Forest Park
Dayton, Ohio 45405

CIRCLE 028 ON READER SERVICE CARD



An incredible simulation

Cardiac Arrest!

Complete with binder and manual for \$69

There's nothing like Cardiac Arrest! You interpret the history, on-screen EKG, lab data, and vital signs, then give treatment orders in plain English. Doctors and nurses use it to train and certify as ACLS (Advanced Cardiac Life Support) providers, yet the excellent manual allows computer buffs to enjoy it as a challenging medical adventure. Caution: requires brain cells. IBM, Apple II+/clie, Atari ST, Atari XE/XE.

"impressive and amazingly complete" *Antic, May 1987*
"both highly educational and fun to play" *STWorld, May 1987*

Other software: ACLS Protocols, \$29. EKG Teaching, \$29. CardioQuiz, \$19. Blood Gases, \$24. QuizPlus, \$29. Demo, \$7. Ask about the ACLS Package (includes Cardiac Arrest!) for \$109. Order direct!

Mad Scientist Software

2063 N. 820 W., Pleasant Grove, UT 84062

Visa/MC orders call 801-785-3028

CIRCLE 061 ON READER SERVICE CARD

25

-5 1/4" DISKETTES FOR ONLY

\$9.95!

*HIGH QUALITY

*SINGLE DENSITY-SINGLE SIDED
(we use them as double sided 'flippies')

*BULK ERASED OVERSTOCK
(disks at this price sold 'as is')

CALL 800 443-0100 ext. 133 24 hours a day—
7 days a week. Catalog number BB0013. Visa or
Mastercard only. Or, send check or money order
to ANTIC PUBLISHING,
544-2ND ST., SAN FRANCISCO, CA 94107.

Education by mouse . . .

Quiz Plus \$29 for Atari ST



QuizPlus is a 100% mouse-driven quiz and tutorial administering program. The PLUS: QuizPlus can mix DEGAS-format graphics into your presentation or quiz.

In minutes, you easily convert your pre-existing quiz or text files for use with QuizPlus, using a standard word-processor. If you want, add a few DEGAS-format pictures or diagrams. Your quiz becomes a colorful computer-education program!

See it at your Atari dealer,
or order direct from:

Mad Scientist Software
2063 North 820 West, Pleasant Grove, UT
84062.
VISA/MC orders call 801-785-3028.

CIRCLE 061 ON READER SERVICE CARD

Compute Your Roots

The Only Complete Genealogy Package For Atari Computer Systems

Compute Your Roots for the Atari ST Systems

Designed for both new and extensiv genealogy projects. COMPUTE YOUR ROOTS features

- * Gene Based
- * Complex Database
- * Full Text Search
- * LDS Computer Forms
- * Fan & Group Sheets
- * Manage Entry Form
- * Enhanced Data Entry System
- * Autoclick Pedigree Link
- * Pedigree Notes
- * Pedigree Charts
- * Individual Entry Form
- * Sound "05"

The program has been specially designed to take full advantage of the Atari ST's power. Its extensive array of tools is available for color monochrome STs with at least 512K.

Compute Your Roots for the Atari 8 bit Systems

* Pedigree Charts
* Family Group Sheets
* LDS Computer Forms
* Fan & Group Sheets
* Manage Entry Form
* Cut & Paste Pedigree Charts
* Single & Double Density
* Sound "05"
* Sound "05"

COMPLETE YOUR ROOTS comes fully equipped with plenty of genealogy tools. This pedigree chart program has a built-in utility chart search tool, searches a chart less than four seconds. A special cut and paste feature in the program has also been included. This lets you easily transfer chart information from one chart to another. Just click on the chart you want to move and drag it to the new chart.

For Atari 8 bits with 512K, disk drive, basic language, 10" or 15" inch printer

To Order Compute Your Roots send Check or Money Order to the Below Address
\$37.95 Atari 8 bit version
\$39.95 Atari ST version
VISA/MASTERCARD Circle Cat. #01 451 3157
Wasach Genealogical Software, 2899 West 7500 South, West Jordan, Utah 84062

CIRCLE 033 ON READER SERVICE CARD



NO FRILLS SOFTWARE

800 E. 23RD ST. KEARNEY NE. 68847

(308)234-6250 M-SAT 11AM-7PM CST

FOR PRINTHEPITM & PRINTMASTERITM 8BT

FONTS & BORDERS 4 NOW ready-\$15

PS Fonts & Borders 1-19 fonts/51 borders, PS Fonts & Borders 2-21 fonts/42 borders, PS Fonts & Borders 3-24 fonts/8 borders-\$15 each 9bit

PS Graphics 1/2-100 NEW pics - \$10 8bit/\$12 ST,

PS Budget Graphics 1,2,3,4,5,6-100 pics on each disk-\$5 8bit/\$7 ST (call for ST volume discount)

Davagraphics 1A-60+ Jewish pics & fonts-\$23 8bit

Donaldson's Christian Stories 1&2- \$20 each 8bit

JACS Graphics disks 1-4-110 pics on each-\$10 each 8bit-\$12 ST). The Only Legal source for these.

Send SASE for samples & other pic disks scheduled. When ordering please specify computer & ad #.

Gen. disks-DSD 5.25" 100% certified - sleeves & tabs 35 cents ea/10 min. DSD 3.5" disks \$1.19 ea/5 min
HIBBONS-BLACK Clich Prowriter or NEC 8023/\$3.99
Panasonic 1090-92/\$4.99 Star NX or NL-10/\$5.79
CASES-5.25" disk cases (holds 70) or 3.5" case/\$9

Rent That Title. On Dec. 1st we start our 8bit rental club. Try that costly title before you buy. Send SASE for details. Low prices-hundreds of titles. We now have a 200 disk PD catalog available of games, music, graphics & more/\$2-\$4 per disk.

ORDER INFO: check, MO, VISA, MC. Software shipped free, accessories pay actual UPS/USPS charge.

Antic Classifieds

SOFTWARE

ATARI ST Public Domain Disks \$4.00 each. Over 300 ST disks. 800/XL/XE disks \$3.00. Specify Computer. Fast Service. Send SASE to: Brad Roltgen Ent., 719 E. Minarets, Fresno, CA 93710 (209) 432-2159 (2/88)

Missing back issues of ANTIC? Write us at ANTIC, 544 Second Street, S.E., CA 94107, or see THE CATALOG in this issue.

AMAZING ATARI 8-BIT SOFTWARE!!! Choose from over 200 Public Domain Theme Disks or pick individual programs. Large Catalog free! Write BELLCOM, Box 1043-A, Peterborough, Ontario, Canada K9J 7A5 (3/88)

GET ALL THE PROGRAMS, NOW MORE THAN 40% OFF! THE ANTIC MONTHLY DISK is now ONLY \$5.95 (plus \$2.00 shipping and handling). FOR SAME DAY SERVICE, use your Visa and M/C and CALL (415) 957-0886 and ask for the DISK DESK.

THE NEW TESTAMENTS OF THE HOLY BIBLE KJV 8-bit and ST. Send SASE for info to: Computers as Tutors, 325 May Court, Mt. Zion, IL 62549. 8-bit DemoDisk \$2.00 (3/88)

ANTIC SEEKS AUTHORS for SOFTWARE MAGAZINE ARTICLES. For Details, send self addressed stamped envelope to: AUTHOR INFO, c/o ANTIC, 544 Second Street, San Francisco, CA 94107.

Atari Public Domain Disks: 8-bit & ST. Large selection. Low prices. Specify computer. Send a SASE to: WYOSOFT, PO Box 30981, Billings, MT 59101 (3/88)

25 HIGH QUALITY 5 1/4" DISKETTES, ONLY \$9.95 (plus \$3.00 s/h) These single sided, single density diskettes are product overstock that have been bulk erased and packaged for shipment. Visa or M/C holders CALL (415) 957-0886 between 8 a.m. and 3 p.m. and ask for the DISK DESK. Or send check or money order to ANTIC PUBLISHING 544 2nd ST., SAN FRANCISCO, CA 94107, ATTN: DISK DESK. at this low price disks are sold "as is".

Advertising Deadlines

March 1988

Insertion Orders: December 2
Artwork: December 9
On Sale: Last week of January

April 1988

Insertion Orders: January 1
Artwork: January 8
On Sale: Last week of February

May 1988

Insertion Orders: February 2
Artwork: February 9
On Sale: Last week of March

An Ad In Antic Reaches More Than 100,000 Serious Atari Users.

Classifieds

**BUY-SELL-
TRADE-SWAP
IN THE CLASSIES**

Antic Classifieds

Classified Manager, Antic-The Atari Resource
544 Second Street, San Francisco, CA 94107
Telephone (415) 957-0886

Name _____ Company _____

Address _____ Phone _____

City/State/Zip _____

MasterCharge/Visa Number _____ Expiration Date _____

Signature _____ Issue(s) Ad To Appear _____

Enclosed is my payment for \$ _____

NON-COMMERCIAL RATE: \$15.00 per line—three (3) line minimum.

COMMERCIAL RATE: \$25.00 per line—four (4) line minimum.

BOLDFACE: Add \$7.50 per line for boldface words or add \$40.00 for the entire ad set in boldface (any number of lines).

TERMS: Prepayment is required. Check, Money Order, Visa or MasterCard is accepted. Make check payable to Antic Publishing.

FORMS: Ads are subject to publisher's approval and **must be TYPED**. One line equals 40 letters and spaces between words. Please underline words to be set in boldface.

GENERAL INFORMATION: Advertisers using Post Office Box numbers in their ads must supply permanent address and telephone numbers. Ad will appear in the next available issue after receipt.

DEADLINE: 90 days prior to cover date (e.g., May 1988 closes February 1, 1988—May issue on sale March 1, 1988).

Clip this coupon, attach to typewritten copy and send with remittance to address above.

HANDWRITTEN COPY WILL NOT BE ACCEPTED.

Advertisers List

Be sure to mention ANTIC when contacting these advertisers—all of whom support the Atari computer.

READER SERVICE NO.	PAGE NO.	READER SERVICE NO.	PAGE NO.		
ABBY'S	001	18	COMPUTER ELITE	009	12
AMERICAN TECHNA-VISION	003	23	COMPUSERVE	012	42
ANTIC	32,48	ELECTRONIC ONE	014	22	
B&C COMPUTERVISION	006	G.E.I.S.C.O.	49		
COMPUTER DIRECT	037	JESSE JONES	19		
CENTRAL POINT	002	LYCO	020	2,52,53	
COMPUTER MAIL ORDER	004	MICROTYME	031	5	
COMPUTER REPEATS	011	NO FRILLS	7		
C.S.S.	015	SOFTWARE DISOUNTERS	040	50	
COVOX	005	SUBLOGIC	026	60	
		TWENTYFIFTH CENTURY	019	19	

ST Advertisers List

This list is provided as a courtesy to our advertisers. ANTIC does not guarantee accuracy or comprehensiveness.

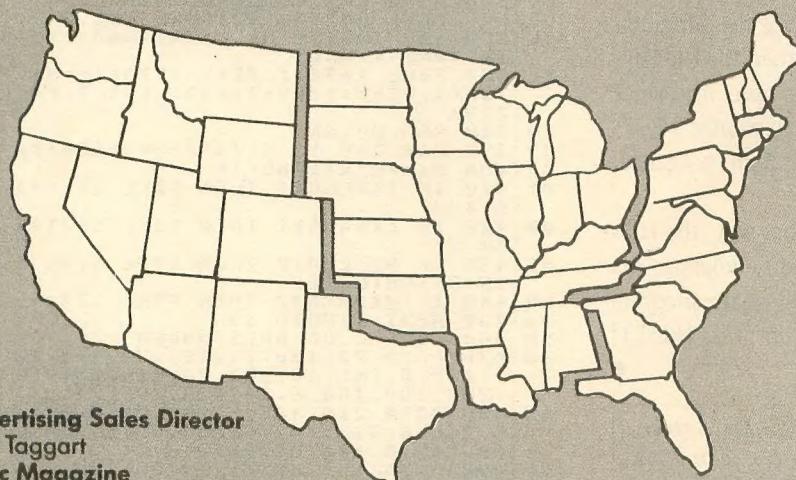
READER SERVICE NO.	PAGE NO.	READER SERVICE NO.	PAGE NO.		
D.R.T'S	017	22	NICKEL CITY ELECTRONICS	016	7
I.C.D.	056	IBC	PROCO PRODUCTS	036	41
MAD SCIENTIST	061	77	SOFTLOGIK	065	29
MARK WILLIAMS	021	6	TEKTRONIX	069	67
MICHTRON	030	55,BC	TIMEWORKS	029	10,11
MICRODAFT	010	14,15	WASATCH	033	77

Advertising Sales

Phoebe Thompson Associates
Phoebe Thompson
408-356-4994

The Pattis Group
Michael Mooney
312-679-1100

Phoebe Thompson Associates
15640 Gardena Way
Los Gatos, CA 95030
PHOEBE THOMPSON
408-356-4994



Advertising Sales Director
John Taggart
Antic Magazine
544 Second Street
San Francisco, CA 94107
(415) 957-0886

Garland Associates
John A. Garland
617-749-5852

The Pattis Group
4761 W. Touhy Ave.
Lincolnwood, IL 60646
MICHAEL MOONEY
312-679-1100

Garland Associates
10 Industrial Park Rd.
Hingham, MA 02043
JOHN A. GARLAND
617-749-5852

Address all advertising materials to:
KATIE MURPHY
Advertising Production Coordinator
Antic Magazine
544 Second Street
San Francisco, CA 94107

By LARRY NOCELLA

BASIC Boink

Don't type the
TYPO II Codes!

BASIC Boink is a colorful new slant on the popular Boink graphics demo programs. Previous Tech Tips from stalwart JACS (Jersey Atari Computer Society) programmer Larry Nocella have appeared in the January, 1987 and April, 1987 issues of Antic. BASIC Boink works on any Atari 8-bit computer with 16K, disk or cassette.

You've seen those Boink programs—bouncing balls, or Atari symbols (Fujis), etc. Like many other Atari programmers, I enjoy these flashy demonstrations of graphics power. So I decided to throw in my own two cents worth—a Boink variation in Atari BASIC that looks good despite the comparative slowness of the language.

Type in BOINK.BAS, check it with TYPO II and SAVE a copy before you RUN it. The program is written in BASIC, but the main work is done by a machine language routine. A DLI (Display List Interrupt) between the six Fujis changes their directions, colors and X-coordinates. This gives the effect of several individual objects.

ABOUT THE PROGRAM

The DLI routine occupies the first half of Page 6 (memory locations 1536-1663) and the rest of Page 6 tracks individual Fuji status.

When you look closely at the display, you'll notice that six Fujis stay on the right side of the screen and six stay on the left. They are kept there by the BASIC part of the program. I could've checked the limits in the DLI, but then the the Fujis would remain in the same pattern the whole time. And since BASIC is slower to the punch, it takes longer to change a Fuji's direction. So the bouncing Fujis change their pattern instead, making the demo more interesting.

Try pressing [BREAK] to end the demo. That way, the Fujis aren't restrained and will go across the screen endlessly. You can type and list the program, but since the main program is in a DLI, the Fujis will keep going until you press [RESET] to return things to normal. ■

If you have a Tech Tip that you would like to share with other readers, send it along to Antic Tech Tips, 544 Second Street, San Francisco, CA 94107. You might get your name in print. We always welcome very short programs that demonstrate the Atari's powers, simple hardware modifications, or useful macros for popular software.

```
BB 10 REM BASIC BOINK
GH 20 REM BY LARRY NOCELLA
PT 30 REM <c>1987, ANTIC PUBLISHING
SP 32 GOTO 40
FS 34 FOR S=80 TO 0 STEP -10:SOUND 0,5,10
,10:NEXT S:RETURN
SF 36 FOR S=45 TO 0 STEP -5:SOUND 0,5,10,
10:NEXT S:RETURN
NK 40 KEEP=PEEK<106>-16:POKE 54279,KEEP:G
RAPHICS 0:POKE 752,1
LQ 50 POKE 710,0:POKE 559,46:POKE 53277,3
,:ST=24:EN=109:IC=15:ZXOK=PEEK<559>
UH 60 POKE 559,0:POKE 623,1
SF 70 LMAX1=120:RMAX1=180
YY 80 LMAX2=54:RMAX2=114
DZ 90 POSITION 0,1:? "BASIC BOINK"
BY LARRY NOCELLA"
TB 100 REM CLEAR P/M AREA
RT 110 PMB=KEEP*256:POKE 712,6
PT 120 FOR LOOP=PMB+512 TO PMB+1024:POKE
LOOP,0:NEXT LOOP
SP 130 REM PLAYERS
SK 140 FOR LOOP=ST TO EN STEP IC
JE 150 RESTORE 520:FOR ZX=1 TO 8:READ A
PX 160 POKE PMB+512+LOOP+ZX,A
NF 170 POKE PMB+768+LOOP+ZX,A:NEXT ZX
JY 180 RESTORE 530:FOR ZX=1 TO 8:READ A
RE 190 POKE PMB+640+LOOP+ZX,A
NT 200 POKE PMB+896+LOOP+ZX,A:NEXT ZX
CD 210 NEXT LOOP:POKE 712,4
GE 220 REM DLI
KO 230 RESTORE 470:FOR I=1 TO 104:READ Z:
POKE 1535+I,Z:NEXT I
UA 240 START=PEEK<560>+PEEK<561>*256
WA 250 POKE START+6,130:POKE START+9,130:
POKE START+12,130:POKE START+16,130:PO
KE START+20,130
RS 260 POKE START+24,130:POKE 1664,0
AU 270 REM COLORS
ZS 280 RESTORE 290:FOR I=0 TO 5:READ Q,Z:
POKE 1665+I,Q:POKE 1694+I,Z:NEXT I
TR 290 DATA 8,100,68,214,54,114,166,24,88
,194,228,146
XG 300 REM X-COORDINATE
XT 310 FOR I=0 TO 5:POKE 1678+I,160:POKE
1708+I,80:NEXT I
UP 320 REM DIRECTION <1=L 0=R>
CL 330 FOR I=0 TO 5:POKE 1671+I,0:POKE 17
01+I,1:NEXT I
UU 340 POKE 512,0:POKE 513,6
VI 350 POKE 54286,192:POKE 712,2
YL 360 FOR I=0 TO 5:Q1=INT<RND<1>*40>;Q2=
INT<RND<1>*40>;
EL 370 POKE 1678+I,PEEK<1678+I>+Q1:POKE 1
708+I,PEEK<1708+I>+Q2:NEXT I:POKE 559,
ZXOK
CQ 380 REM BOINK
UY 390 FOR I=0 TO 5:ZX=PEEK<1678+I>
CA 400 NX=PEEK<1708+I>
DT 410 IF ZX<LMAX1 THEN POKE 1671+I,0:GOT
0 430
UR 420 IF ZX>RMAX1 THEN POKE 1671+I,1:GOS
UB 36
HT 430 IF NX<LMAX2 THEN POKE 1701+I,0:GOS
UB 34:GOTO 450
HR 440 IF NX>RMAX2 THEN POKE 1701+I,1
JJ 450 NEXT I:GOTO 390
SM 460 REM ML COLORER/MOVER
RG 470 DATA 72,138,72,152,72,174,128,6,18
,9,129,6,141,18,208,24,216,105,6,141,19
,208,189,158,6,141,20,208,24
BW 480 DATA 216,105,6,141,21,208,189,135,
6,240,6,222,142,6,184,80,3,254,142,6,1
89,142,6,141,0,208,216,24
QF 490 DATA 105,8,141,1,208,189,165,6,240
,6,222,172,6,184,80,3,254,172,6,189,17
2,6,141,2,208,24,216,105
FU 500 DATA 8,141,3,208,232,224,6,208,2,1
62,0,142,128,6,104,168,104,170,104,64
PC 510 REM PLAYER DATA <L/R>
FJ 520 DATA 13,13,13,13,13,29,57,113
KR 530 DATA 176,176,176,176,176,184,156,1
42
```

Refresh Your Memory



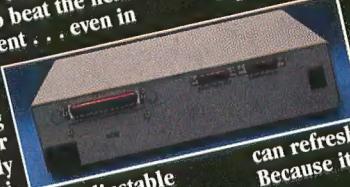
And Keep Your Cool.

Introducing the ST Hard Drive System from ICD that refreshes your memory better than any other ST hard drive around. No problem.

It's the drive that not only looks cool, but stays cool too. All because of a built-in fan that knows exactly how to beat the heat and maintain a calm, cool and collected environment . . . even in your most heated situations. *No sweat.*

And, it's the hard drive that takes a refreshing approach to aesthetic case design as well. See for yourself. It's easy on the space, fitting perfectly under the monitor. And it's easy on the eyes, tailored to look great in the company of your Atari ST. With adjustable front legs, your monitor gets the lift it needs for comfortable viewing. *No strain.*

Despite a sleek and compact exterior, the ICD ST Hard Drive



System is packed full of overwhelming enhancements. Like an internal clock that tags each file with up-to-the-minute time and date information. Not to mention expansion capabilities that welcome the connection of up to six SCSI devices and daisy-chaining Atari's DMA Bus (ACSI). It's available in more memory capacities than you can imagine. With storage ranging from 20 megabyte systems up to 280 megabytes. And, there's dual drives too, that double your protection. *No stress.*

So, the next time you think about a hard drive for your Atari ST, think about the countless ways we can refresh your memory. It's the only drive worth remembering. Because it's from ICD. *No wonder.*

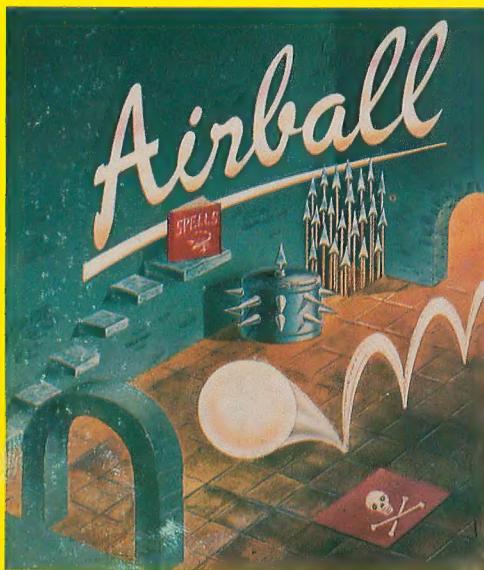
For further product information, please call or write for our catalog today.

ICD

1220 Rock Street
Rockford, IL 61101-1437
(815)968-2228
MODEM: (815)968-2229
FAX: (815)968-6888

Atari ST is a trademark of Atari Corporation.

Airball



An exciting new game for your Atari ST with outstanding graphics!

"Now you're really in trouble," said the Evil Wizard, "I'm turning you into a ball of air and sending you into a mansion with over 250 rooms! If that sounds easy, I'm telling you it's not. Your ball has a slow leak and you'll need to jump on a pump and pump yourself up, but the pumps are hidden in only a few rooms."



Once in the rooms you'll have to pick up objects that have been left behind, such as crosses, tins of beans, a Buddha, and a dragon statue. At the end of the maze is a spell book that will turn you back into a human again. "Sounds easy," you say to the wizard, as he laughs and says, "there is much more in store for you than you realize!"

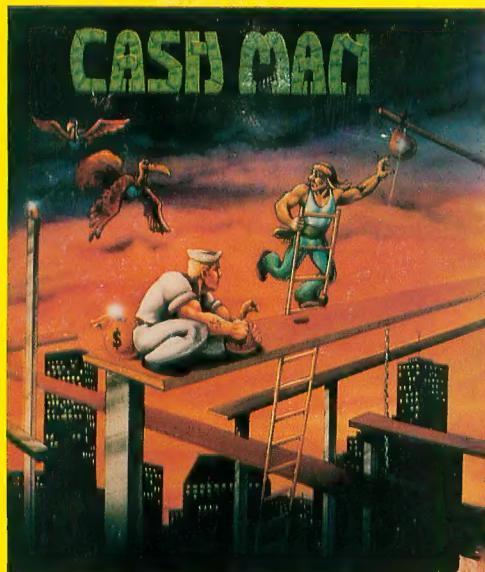
Color only...\$39.95

Airball Construction Set

A great addition for your Airball game! You can now make the exciting Airball game even better. With this utility you can build your own rooms for Airball. Make the game just the way you want or try to make a challenge that your friends cannot beat!

Color only...\$24.95

Cashman



Dozens of fascinating playing screens with various levels of difficulty, lets anyone have exciting fun while experiencing the Cashman adventure.

Play by yourself or invite the ultimate challenge of simultaneous two player competition. Run along the colorful girders, jump across the tremendous chasms, climb the wobbly ladders, or grab a BYRD and fly to get the loot before your opponent does!



Be careful though, the KATS are on the prowl to stop you, and wrestling with them can be very exhausting. But don't despair, there's more than one way to skin a KAT -- throw eggs, what else! And if your opponent starts grabbing the money from under your nose, just toss an egg his way!

Color only...\$29.95



576 S. Telegraph
Pontiac, MI 48053
(313) 334-5700

For more information
on these or other programs,
ask for our latest catalog!

Dealer inquiries welcome.
Visa and Mastercard accepted.